Yuba River Development Project
&
Narrows Joint EIR

July 2025

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EXECUTIVE SUMMARY

ES.1 Introduction

The Yuba County Water Agency (Yuba Water) operates the Yuba River Development Project (YRDP) and the Narrows Hydroelectric Project (Narrows Project), both of which are hydroelectric projects that operate pursuant to licenses issued by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act (FPA). Yuba Water is seeking renewal of the FERC licenses to continue its operations and maintenance (O&M) of both projects. As the lead agency under the California Environmental Quality Act (CEQA), Yuba Water has elected to prepare a joint environmental impact report (EIR) for the FERC license renewals for both the YRDP and the Narrows Project. This Draft EIR (DEIR) evaluates the potential environmental impacts of the proposed renewal of FERC licenses for both the YRDP (Proposed YRDP Project) and the Narrows Project (Proposed Narrows Project), hereinafter also referred to jointly as the Proposed Projects.

ES.2 Project Background

The Project Area is located mainly in northeastern Yuba County, along with a portion of Sierra County and bordering Nevada County. The YRDP is shown in **Figure ES-1**. The existing YRDP includes three developments – New Colgate, New Bullards Bar Minimum Flow, and Narrows 2. The first two developments are primarily centered around New Bullards Bar Dam and Reservoir in northeastern Yuba County. The New Colgate Development includes two diversion dams (Our House and Log Cabin), two diversion tunnels (Lohman Ridge and Camptonville), one storage reservoir (New Bullards Bar), one power tunnel and penstock (New Colgate) and one powerhouse (New Colgate). The New Bullards Bar Minimum Flow Development consists of one penstock, one powerhouse, one transformer, and one streamflow gage. The third development, Narrows 2, is located downstream of Englebright Dam, which is owned and operated by the U.S. Army Corps of Engineers (USACE). The Narrows 2 Development consists of one penstock, one powerhouse and switchyard, and both a full and a partial bypass. The YRDP also includes 16 developed recreation facilities, located at New Bullards Bar Reservoir. These consist of seven campgrounds, two day use/picnic sites, three boat launches/boat access sites, two observation sites, and two trails. Undeveloped recreation sites are located at the Log Cabin Diversion Dam and the Our House Diversion Dam impoundments.

The existing Narrows Project is located in Nevada County and consists of one development (Figure ES-2). The Narrows Project was formerly owned and operated by the private utility Pacific Gas & Electric (PG&E), but it is now owned and operated by Yuba Water, and the Narrows Project is operated in coordination with the YRDP Narrows 2 Development. Similar to the Narrows 2 Development, the Narrows 1 Powerhouse and related facilities are located downstream of Englebright Dam. These facilities include one tunnel, one penstock and standpipe, one powerhouse, and one powerhouse access tram. The Narrows Project has no recreation facilities.

Figure ES-1. YRDP and Project Vicinity.

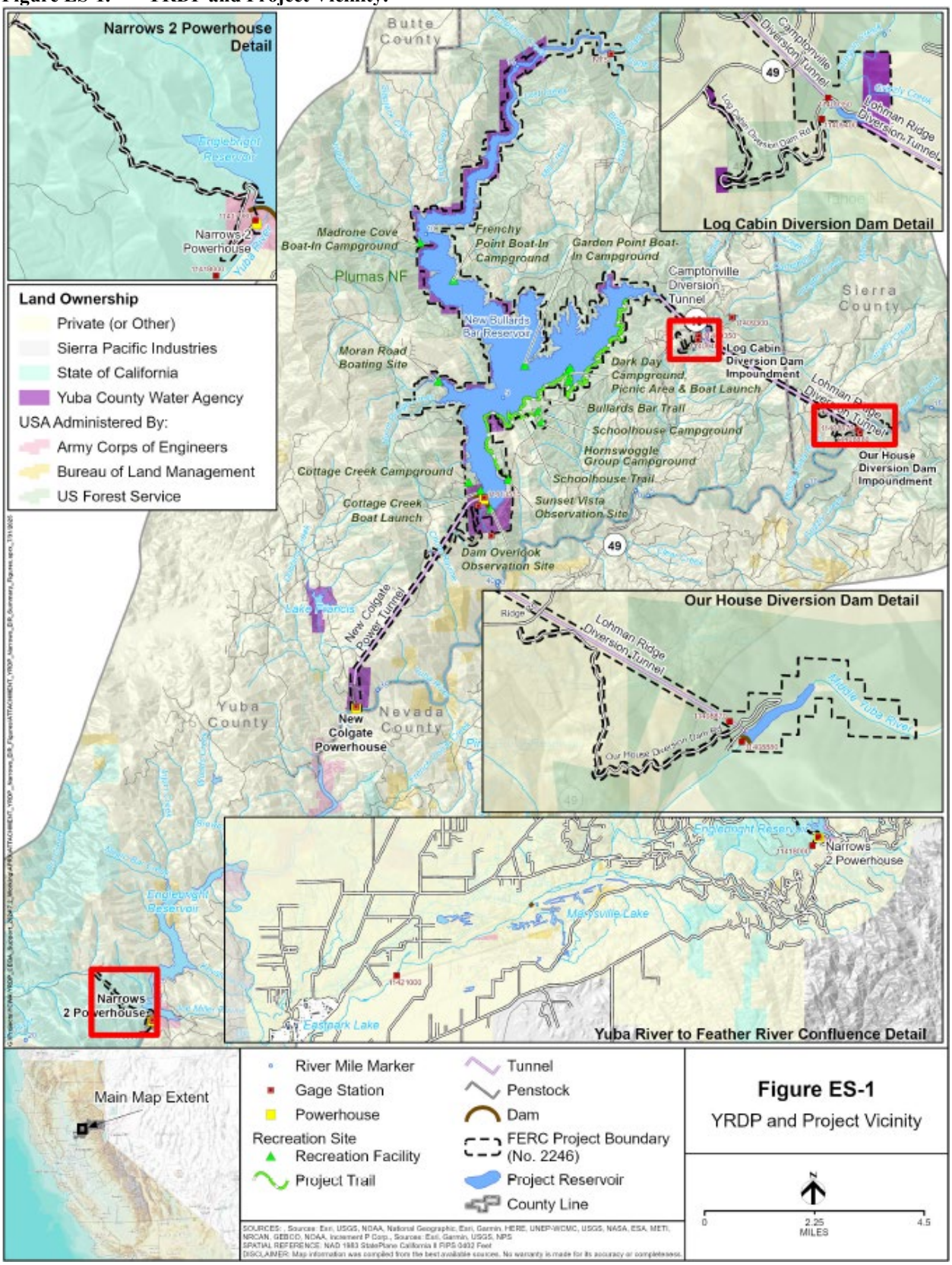
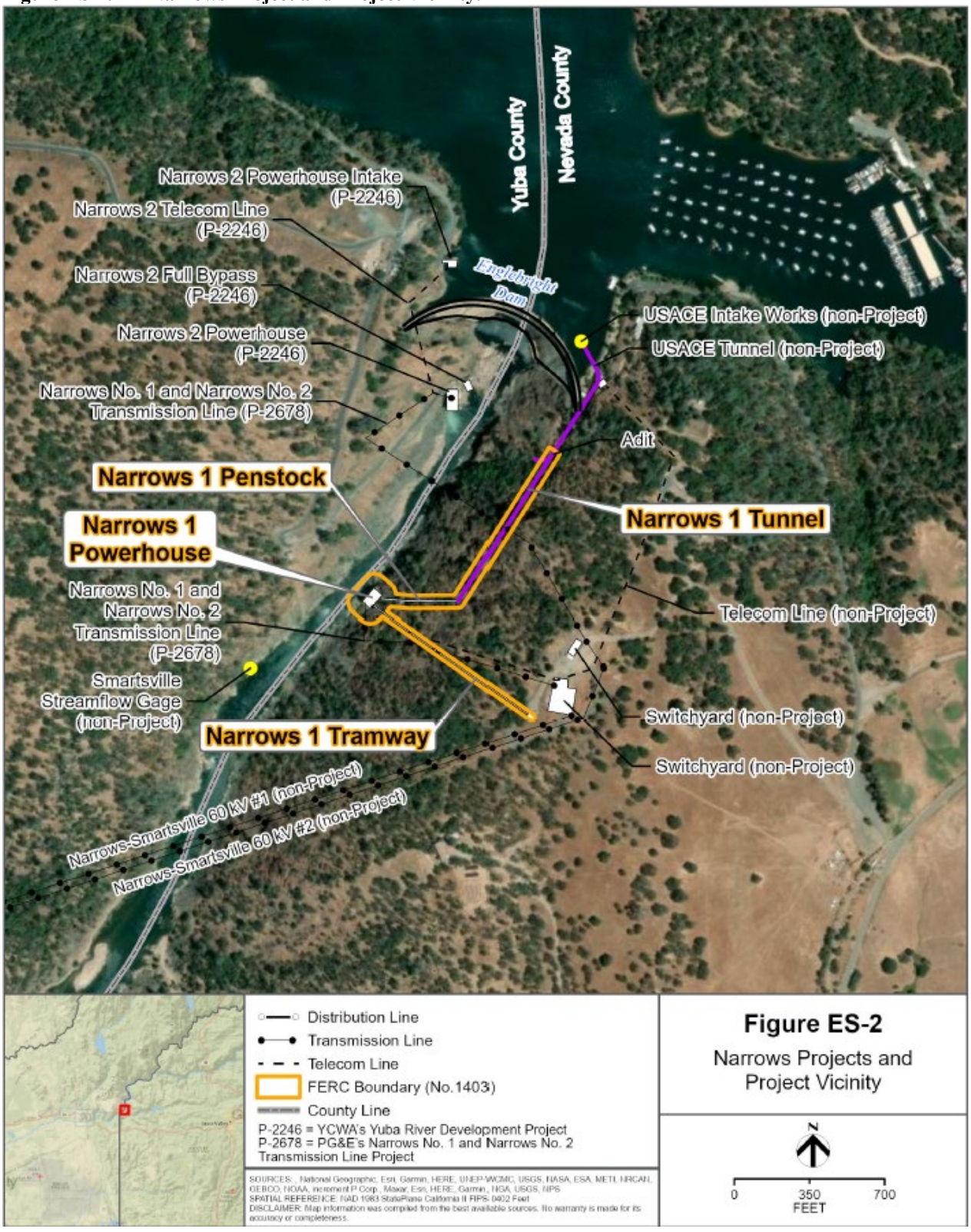


Figure ES-2. Narrows Project and Project Vicinity.



The YRDP (FERC Project No. 2246) currently operates under a 50-year license that was originally issued on May 16, 1963 by the Federal Power Commission, FERC's predecessor. The Federal Power Commission's May 6, 1966, Order Amending License changed the license's effective date to May 1, 1966, for a term ending on April 30, 2016. Since the existing license expired in 2016, FERC has issued Yuba Water an automatically renewing annual license that allows operation of the project under existing license terms and conditions until FERC issues the new FPA license with updated terms and conditions.

On April 28, 2014, Yuba Water filed an application for a new 50-year license with FERC to continue to operate and maintain the YRDP (Docket No. P-2246). On June 5, 2017, Yuba Water filed an amended license application (errata filed July 21, September 15, and November 1, 2017) for the YRDP. Yuba Water has requested a new 50-year license for the YRDP because Yuba Water anticipates incurring substantial expenses during the next license term for modifications to its generation facility, the addition of a flood control outlet, and implementing protection, mitigation, and enhancement measures, including constructing and refurbishing recreation facilities and access roads thereto.

The Federal Power Commission also issued an original license for the Narrows Project (FERC Project No. 1403) to the Pacific Gas and Electric Company (PG&E) on August 1, 1941. FERC issued a new project license to PG&E on February 11, 1993, stating that the new license would be effective for the period from February 1, 1993, through January 31, 2023. On January 26, 2018, FERC approved PG&E's request to extend the license term to January 31, 2026. On May 2, 2019, FERC approved the transfer of the license from PG&E to Yuba Water.

On November 14, 2023, Yuba Water filed an application for a new FPA license with FERC to continue to operate and maintain the Narrows Project (Docket No. P-1403). Yuba Water has requested a new license term of 50 years for the Narrows Project that would end concurrently with the term of the FPA license issued for the YRDP. Although Yuba Water is not proposing changes to the Narrows Project that would ordinarily justify a 50-year license term, it is in the public interest, and consistent with FERC's 2017 Policy Statement (82 FR 49501) on establishing license terms, to relicense the two projects at the same time in the future. As described in this DEIR, the Narrows Project and the YRDP Narrows 2 Development are co-located at Englebright Dam and have coordinated operations. Accordingly, Yuba Water determined that it would be most appropriate to address the environmental impacts of relicensing both the YRDP and the Narrows Project in the same CEQA document.

Compliance with the National Environmental Policy Act (NEPA) of 1969 must be demonstrated prior to FERC undertaking a federal action, including issuance of new FPA licenses to Yuba Water for continued O&M of the YRDP and the Narrows Project. In 2019, FERC, along with the USACE as a cooperating agency, issued a Final Environmental Impact Statement (FEIS) for Hydropower License, Yuba River Development Project, Project No. 2246-065 – California (FEIS) in accordance with NEPA and FERC regulations. Subsequently, FERC sent Yuba Water an Additional Information Request (AIR) on March 8, 2021 to inform FERC staff's analysis in a Supplemental EIS (SEIS) for the YRDP.

When a project action requires compliance with both CEQA and NEPA, state and local agencies are encouraged to use the NEPA document rather than preparing an independent CEQA document. However, if the NEPA document does not fully meet all the requirements of CEQA, those points of analysis missing from the NEPA document must be added, supplemented, or identified. Yuba Water previously issued a Notice of Intent to rely on the 2019 FERC FEIS for the YRDP Relicensing, in combination with a Supplemental Analysis to satisfy CEQA requirements. Subsequently, FERC informed Yuba Water of its plans to prepare a SEIS and a revised biological assessment (BA). FERC explained that the SEIS will address new information in the administrative record and may revise FERC staff's preferred project alternative. To date, FERC has not yet issued either the SEIS for the YRDP or a NEPA environmental compliance document for the Narrows Project, and the timing of these pending federal actions is unknown. As a result, Yuba Water no longer intends to rely on the FEIS and a CEQA Supplemental Analysis; instead, it has prepared this stand-alone EIR for the Proposed Projects.

ES.3 Project Purpose and Objectives

When FERC issues new licenses for the YRDP and the Narrows Project under the FPA, Yuba Water will be required to decide whether or not to accept each one of the new licenses. The project objectives provide the reasons that Yuba Water is seeking renewal of FERC licenses for the YRDP and the Narrows Project, respectively.

The project objectives for the YRDP Relicensing are the following:

1. Obtain a new FERC license for the YRDP under which Yuba Water can generate sufficient revenues to support its continued use, operation, and maintenance of the YRDP facilities to advance its missions established by the Legislature in the Yuba County Water Agency Act (Agency Act).
2. Obtain a new FERC license for the YRDP under which Yuba Water can generate sufficient revenues to maintain and operate Yuba Water's existing flood control facilities, and implement new flood risk reduction projects in Yuba County.
3. Obtain a FERC license for the YRDP under which Yuba Water can operate the YRDP to provide adequate and reliable agricultural surface water supplies within Yuba County and to maintain sustainable conditions in the North Yuba and South Yuba groundwater basins for all beneficial uses, consistent with the Sustainable Groundwater Management Act (Water Code sections 10720-10738).
4. Operate the YRDP to provide streamflow and water temperature benefits for sensitive fish species in the lower Yuba River, downstream of the YRDP's facilities, consistent with the benefits the YRDP has provided for those beneficial uses.
5. Consistent with FERC's March 2021 AIR, implement any additional protections for ESA-listed fish species in the lower Yuba River in a way that both:

(a) improves Yuba River water temperatures for those species and their designated critical habitat; and

(b) equitably allocates protective activities such that no entity is disproportionately burdened with a responsibility to mitigate impacts on those species caused by other entities.

6. Continue to generate long-term, predictable revenue for Yuba Water's programs to support Yuba County's disadvantaged communities consistent with Yuba Water's mission.
7. Continue to support California's power requirements by providing carbon-free hydropower generation to:

   (a) meet resource diversity and capacity needs within the Sierra Local Capacity Area consistent with the Agency Act, California Energy Commission (CEC) regulations and California Independent System Operator (CAISO) energy markets.

   (b) To respond to requests from CAISO to provide additional power during power emergencies (e.g., heat-related shortages) to support statewide electrical grid systems.

8. Continue to generate long-term, predictable revenue for Yuba Water's fisheries and aquatic habitat enhancement projects on the lower Yuba River.
9. Obtain stability and predictability in long-term YRDP operations to generate sufficient funds to allow Yuba Water to comply with the YRDP license conditions, and to justify substantial upfront investments by Yuba Water for modifications to its generation facilities, the addition of the flood control outlet, and implementing protection, enhancement, and mitigation measures (PM&Es), including constructing and refurbishing recreation facilities and access roads thereto during the next license term.
10. Consistent with state policies favoring water transfers stated in Water Code sections 109 and 475, continue to support statewide water supply reliability through continued Lower Yuba River Accord transfers to contractors of the Central Valley Project (CVP) and the State Water Project (SWP), and potentially others, under the Lower Yuba River Accord Water Purchase Agreement.

FERC's issuance of a new license for the YRDP would allow Yuba Water to continue to use water available to Yuba Water to generate electricity at the YRDP facilities for the term of a new FERC license, consistent with the above objectives.

The project objectives for the Narrows Project Relicensing include the following:

1. Continue to support Yuba Water's coordinated operations of the Narrows Project with the YRDP to advance and implement Yuba Water's core flood-control and water-supply missions established by the Legislature in the Agency Act.
2. Obtain a new FERC license for the Narrows Project to generate revenues to continue to fund operation and maintenance of the Narrows Project facilities as part of Yuba Water's flood-control and water-supply missions under the Agency Act.
3. Continue to generate long-term, predictable revenue for Yuba Water's programs to support Yuba County's disadvantaged communities.

4. Continue to generate long-term, predictable revenue for Yuba Water's fisheries and aquatic habitat enhancement projects on the lower Yuba River.
5. Continue to support California's power requirements by providing renewable hydropower generation to meet resource diversity and capacity needs consistent with the Yuba County Water Agency Act, CEC regulations and CAISO energy markets.
6. Obtain stability and predictability in long-term Narrows Project operations to generate funds to allow Yuba Water to comply with the Narrows Project license conditions.
7. Continue to provide stability and reliability in long-term YRDP and Narrows Project coordinated operations by obtaining a new FERC license for the Narrows Project that will run concurrently with the term of a new FERC license for the YRDP.

FERC's issuance of a new license for the Narrows Project would allow Yuba Water to continue to use public waters to generate electricity at the Narrows Project facilities for the term of the new FERC license, making electrical power from a renewable resource available for transmission to its customers, consistent with the above objectives.

ES.4 Description of Proposed Projects

The YRDP component of the Proposed Projects is shown in **Figure ES-1**, while the Narrows Project component is shown in **Figure ES-2**.

ES.4.1 YRDP

Yuba Water is seeking renewal of the FERC license for the YRDP to continue to provide a source of hydroelectric power and flood control and serve as a water supply for both domestic and irrigation purposes. Project benefits include water supply, flood control, recreation, fish and wildlife habitat, and power generation. The latter is a significant source of revenue for Yuba Water; these revenues finance the YRDP generally and enable Yuba Water to implement all its statutory missions, to make substantial water-related investments to support Yuba County's disadvantaged communities, and to continue to fund significant environmental projects. Yuba Water is also proposing the project, in part, because the YRDP provides low-cost power that displaces generation from non-renewable resources (i.e., fossil-fuel generation).

In addition to the continued O&M of the existing YRDP facilities described in Section 2.3 of the EIR, the YRDP Relicensing Project includes:

1. Project-related changes proposed by Yuba Water and accepted by FERC staff in the FEIS;
2. FERC staff-recommended modifications of Yuba Water's proposal and additional measures;
3. Implementation of the USFS's December 2, 2022 Revised Final FPA Section 4(e) Terms and Conditions for the YRDP (Section 4(e) Conditions);

4. Implementation of Yuba Water's recommended findings for 2025 CWA Section 401 Water Quality Certification (WQC) Conditions for the new YRDP FERC license that were submitted for consideration to the SWRCB on December 30, 2024;

5. FERC Form L-5 Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States; and

6. Implementation of protective measures for ESA-listed species under the jurisdictional authority of the USFWS, as described in the USFWS's June 21, 2018 letter of concurrence.

Also, as described in Chapter 2, Project Description, the YRDP Relicensing Project would involve:

- Modifications to existing YRDP facilities, including recreation facilities.
- Adjustments to the FERC Project Boundary.
- Protection, mitigation, and enhancement (PM&E) measures proposed by Yuba Water.
- All mandatory terms and conditions.

ES.4.1.1 Proposed YRDP Facilities

ES.4.1.1.1 Power Generation Facilities

Yuba Water proposes to add to the YRDP a new Tailwater Depression System (TDS) at the New Colgate Powerhouse. The proposed TDS would introduce compressed air into the turbine discharge chamber to lower the tailwater elevation to a level that does not interfere with turbine operation, thereby allowing continued turbine operation during high flows. The proposed TDS would only operate during high flow events, when the combined releases from New Bullards Bar Dam and flows from the Middle Yuba River would otherwise preclude New Colgate Powerhouse operations. The anticipated total duration of the construction would be 5 months.

ES.4.1.1.2 Non-Generation Facilities

New Bullards Bar Dam Auxiliary Flood Control Outlet (i.e., ARC Spillway)

The ARC Spillway project, while considered part of the YRDP, was analyzed for its environmental impacts in a separate EIR certified in 2024. However, ARC Spillway operations are being considered as part of the YRDP Relicensing Project that is characterized in this DEIR because it was addressed in FERC's FEIS and it is expected to be a component of the long-term operation of the YRDP that is described in the new FERC license. Releases from the ARC Spillway would be made in anticipation of large storms to provide increased evacuated storage capacity in New Bullards Bar Reservoir prior to and during high-precipitation events and large storm peak inflows to reduce the peak outflow. The ARC Spillway would operate conjunctively with the New Bullards Bar Dam Primary Spillway and the New Colgate Powerhouse to meet the overall target releases of the dam. Once completed, the ARC Spillway and associated facilities/areas would be incorporated into the YRDP under FERC's jurisdiction and regulated under the FPA.

Modifications to Our House Diversion Dam and Log Cabin Diversion Dam Fish Release Outlets

Yuba Water proposes to change minimum flows on the Middle Yuba River downstream of Our House Diversion Dam from the requirement in the existing license of 30 - 50 cubic feet per second (cfs) to 40 - 120 cfs, and to change minimum flows on Oregon Creek downstream of Log Cabin Diversion Dam from the requirement in the existing license of between 8 - 12 cfs to 6 - 43 cfs. Furthermore, Yuba Water proposes to include in the new license a requirement to control spill at Our House Diversion Dam by releasing up to 600 cfs and to control spill at Log Cabin Diversion Dam by releasing up to 100 cfs. To accomplish this, because the proposed flows would exceed the capabilities of the existing fish release outlets, a 68-inch diameter outlet pipe with control valve is proposed to be installed at Our House Diversion Dam and a 38-inch diameter outlet pipe with control valve is proposed to be installed at Log Cabin Diversion Dam. The existing fish release outlets at Our House and Log Cabin diversion dams would remain in place and be able to release at the existing capacities (i.e., 59 and 18 cfs, respectively). The new low-level outlets would not affect the existing low-level outlets at the dams and would only be used for controlled releases from the dams in excess of the existing fish release valves; the modifications would not result in added power generation. Actual field construction for each proposed facility would take no more than six months.

Modifications to Lohman Ridge Diversion Tunnel Intake

Yuba Water proposes to periodically close the Lohman Ridge Diversion Tunnel on the Middle Yuba River during wetter water years and when there is sufficient storage in New Bullards Bar Reservoir to meet water management objectives. To do this, Yuba Water proposes to replace an existing gate on the tunnel intake with a more efficient gate structure involving the addition of a new regulating gate and the relocation of the existing bulkhead gate. Actual field construction would take no more than six months.

ES.4.1.1.4 Recreation Facilities

Yuba Water proposes several enhancements to the existing YRDP recreation facilities, along with the construction of new facilities, all at New Bullards Bar Reservoir. When constructing new YRDP recreation facilities, Yuba Water would obtain all necessary permits and approval for survey work, facility design and on-site resource evaluations, including U.S. Forest Service permits for work on National Forest System (NFS) land.

Existing facilities that would be improved would include Schoolhouse Campground, Dark Day Campground, and Hornswoggle Group Campground. These would involve primarily utility and restroom improvements, although additional campsites would be provided at Schoolhouse and Hornswoggle Campgrounds, and a 50-person capacity amphitheater is proposed at Schoolhouse Campground. The existing Cottage Creek Picnic Area would have four additional campsites and utility improvements, and the Dark Day Picnic Area would have additional picnic sites and other amenities. Yuba Water also proposes rehabilitation of the Garden Point and Madrone Cove Boat-in Campgrounds, while decommissioning the existing Frenchy Point Boat-in Campground. The Sunset Vista Observation Site is proposed for rehabilitation and the Dam Overlook Observation Sites would be enhanced. The Cottage Creek and Dark Day Boat Launches would be rehabilitated, along with the Moran Road Boating Site. The existing water treatment and delivery system serving

the campgrounds would undergo major rehabilitation and expansion. Additionally, recreation wastewater systems also are proposed for rehabilitation.

New recreation facilities that are proposed include the Kelly Ridge Campground, which would have 27 campsites with showers and restrooms. The Shadow Ridge Campground, which would replace the former Burnt Bridge Campground, would have 18 campsites, along with restrooms and a 30-person capacity amphitheater. A new Cottage Creek Picnic Site with 10 picnic sites would be constructed. A West Shoreline Trail would be installed along the western shoreline of New Bullards Bar Reservoir, connecting the Cottage Creek and Shadow Ridge recreation complexes.

The Bullards Bar and Schoolhouse recreation trails are proposed for enhancements. Yuba Water is proposing to add 0.23 miles of new Recreation Roads. Yuba Water also proposes to withdraw 0.77 miles of Recreation Roads.

Yuba Water's *Recreation Facilities Plan* includes a detailed implementation schedule for major rehabilitation, near-term rehabilitation and enhancements at each existing recreation facility and for new recreation facilities extending from License Year 1 through 20. The majority of the work on NFS lands would occur within the first eleven years of the new license, with some work on Yuba Water facilities occurring in Years 14 through 20.

ES.4.1.1.5 Other Facilities

Yuba Water's *Transportation System Management Plan* provides guidance for the rehabilitation and maintenance of Primary Project Roads and Trails, which are non-general use roads and trails that are primarily used for the YRDP. Approximately 12.47 miles of non-recreational Primary Project Roads and Trails are proposed for rehabilitation, along with approximately 5.59 miles of new roads. Approximately 4.07 miles of recreational Primary Project Roads and Trails are proposed for rehabilitation, along with approximately one mile of new roads.

ES.4.1.2 Proposed FERC Boundary

Yuba Water proposes several changes to the FERC Project Boundary for the YRDP to more accurately define lands necessary for the safe O&M of the YRDP and other purposes, such as recreation, shoreline control, and protection of environmental resources. There are two categories of proposed project boundary changes:

- Category 1 - Corrections to the existing FERC Project Boundary to: (1) add lands currently utilized with a preponderance of use related to the YRDP O&M; (2) add lands associated with proposed new recreation facilities under Yuba Water's proposed resource management measures; or (3) remove lands from the Project Boundary that do not have YRDP Facilities and are not used or necessary for YRDP O&M. These proposed changes are essentially making corrections to the FERC Project Boundary.
- Category 2 - Proposed changes to the existing FERC Project Boundary around the YRDP reservoir and impoundments from surveyed coordinates to a contour located above the normal maximum water surface elevation (NMWSE).

In total, the proposed changes would decrease the area within the YRDP FERC Project Boundary by 1,591.8 acres, including 1,003.4 acres of land managed by the USFS and 5.0 acres of land managed by USACE.

ES.4.1.3 Proposed Changes to Conditions in the Existing YDRP FERC License

Yuba Water developed 41 proposed conditions for the YRDP, including associated implementation plans, for the new license in collaboration with Relicensing Participants. In particular, 12 of Yuba Water's YRDP proposed conditions would modify flow requirements in the existing FERC license and, thereby, affect future YRDP operations.

- Water year types (WYTs) for Conditions Pertaining to New Bullards Bar Dam, Our House Diversion Dam, and Log Cabin Diversion Dam (Yuba Water's YRDP Proposed Condition WR2)

- WYTs for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass (Yuba Water's YRDP Proposed Condition WR3)

- Minimum Flows in the Middle Yuba River Downstream of Our House Diversion Dam and Log Cabin Diversion Dam (Yuba Water's YRDP Proposed Condition AR1)

- Minimum Flows in the North Yuba River Flow Downstream of New Bullards Bar Dam (Yuba Water's YRDP Proposed Condition AR10)

- Control Project Spills at Our House Diversion Dam (Yuba Water's YRDP Proposed Condition AR2)

- Control Project Spills at Log Cabin Diversion Dam (Yuba Water's YRDP Proposed Condition AR12)

- Periodically Close Lohman Ridge Diversion Tunnel (Yuba Water's YRDP Proposed Condition AR11)

- Provide Whitewater Boating Below Our House Diversion Dam (Yuba Water's YRDP Proposed Condition RR3)

- Minimum Flows on the Yuba River Downstream of the Narrows 2 Powerhouse and Narrows 2 Full Bypass (Yuba Water's YRDP Proposed Condition AR3)

- Control Project Ramping and Flow Fluctuation Downstream of Englebright Dam (Yuba Water's YRDP Proposed Condition AR9)

- Control Project Spills at New Bullards Bar Dam (Yuba Water's YRDP Proposed Condition AR4)

- Implement Log Cabin and Our House Diversion Dams Sediment Management Plan (Yuba Water's YRDP Proposed Condition GS2)

ES.4.1.4 FERC Staff Alternative Modifications to YRDP Proposal

FERC's FEIS analyzed the potential effects of continued YRDP operation and recommended conditions for any new license that may be issued by FERC for the YRDP. In addition to Yuba Water's proposal, FERC considered several alternatives and selected the FERC Staff Alternative as the NEPA preferred alternative. The FERC Staff Alternative included several recommended modifications of Yuba Water's proposal, as well as some additional measures identified by FERC staff:

Water Quantity:

- Modify Yuba Water's proposed Drought Management Plan (YRDP Proposed Condition WR9).

Aquatic Resources:

- Maintain summer water temperatures in the lower Yuba River in Schedule 6 years.
- Modify Yuba Water's proposed Aquatic Invasive Species Management Plan (YRDP Proposed Condition AR5).
- Modify Yuba Water's proposed New Bullards Bar Reservoir Fish Stocking Plan (YRDP Proposed Condition AR6).
- Modify Yuba Water's proposed Lower Yuba River Aquatic Monitoring Plan (YRDP Proposed Condition AR8).
- Develop a Narrows Reach Fish Stranding Prevention Plan for the lower Yuba River, downstream of the Narrows 1 and Narrows 2 Powerhouses.
- Revise minimum streamflows below New Bullards Bar Dam (YRDP Proposed Condition AR10).
- Develop a comprehensive Large Woody Material (LWM) enhancement plan.

Terrestrial Resources:

- Modify Yuba Water's proposed Integrated Vegetation Management Plan (YRDP Proposed Condition TR1).
- Develop a lower Yuba River riparian restoration plan, in consultation with USFWS, CDFW, NMFS, and the South Yuba River Citizen's League (SYRCL).
- Modify Yuba Water's proposed Bald Eagle and American Peregrine Falcon Management Plan (TR2).
- Monitor water temperature continuously from April 1 through September 15 for 3 years at two foothill yellow-legged frog breeding sites in the Middle Yuba River downstream from Our House Diversion Dam and at two sites in Oregon Creek downstream of Log Cabin Diversion Dam.

- Ensure procedures for decontaminating field equipment to prevent the spread of aquatic pests and disease between waterbodies, as described in Yuba Water's proposed Aquatic Invasive Species Monitoring Plan, are applied for activities where equipment is transported from one body of water to another.

Cultural Resources:

- Revise Yuba Water's Historic Properties Management Plan (HPMP).

ES.4.1.5 Summary of FERC-Approved YRDP Implementation Plans

During the FERC relicensing process, Yuba Water, other agencies, and other stakeholders reached collaborative agreement on more than 30 measures, many of which include detailed implementation plans. Although the agreed-upon measures and associated plans are intended to improve existing conditions and provide benefits overall, some plans do involve construction and operations-related activities that could have the potential to impact environmental resources. Because these collaboratively agreed-upon measures and associated plans are important components of the YRDP Proposed Project, they are listed below:

- Aquatic Invasive Species Management Plan (2019)
- Bald Eagle and American Peregrine Falcon Management Plan (2019)
- Bat Management Plan (2016)
- Drought Management Plan (2017)
- Erosion and Sediment Control Plan (2016)
- Fire Prevention and Response Plan (2017)
- Hazardous Materials Management Plan (2019)
- Historic Properties Management Plan (2017)
- Integrated Vegetation Management Plan (2019)
- Lower Yuba River Aquatic Monitoring Plan (2016)
- New Bullards Bar Reservoir Fish Stocking Plan (2019)
- Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan (2018)
- Log Cabin and Our House Diversion Dams Sediment Management Plan (2018)
- Recreation Facilities Plan (2022)
- Ringtail Management Plan (2016)

- Streamflow and Reservoir Level Compliance Monitoring Plan (2017)
- Transportation System Management Plan (2017)
- Upper Yuba River Aquatic Monitoring Plan (2017)
- Visual Resources Management Plan (2016)
- Water Quality Monitoring Plan (2016)
- Water Temperature Monitoring Plan (2016)

In addition to implementing the activities described in the implementation plans discussed above, the FERC Staff Alternative and FERC's draft license articles in Appendix C of the FEIS recommended that Yuba Water also develop and implement three new plans and revise five existing plans at such time as a new FERC license is issued. The implementation plans that are to be developed or revised when a new FERC license for the YRDP is issued include the following:

New Plans:

- Narrows Reach Fish Stranding Prevention Plan (FERC Article 409)
- Large Woody Material Management Plan (FERC Article 410)
- Lower Yuba River Riparian Restoration Plan (FERC Article 412)

Revised Plans:

- Bald Eagle and American Peregrine Falcon Management Plan (FERC Article 413)
- Drought Management Plan (USFS 4(e) Condition 53)
- Historic Properties Management Plan (FERC Article 415)
- Integrated Vegetation Management Plan (FERC Article 411)
- New Bullards Bar Reservoir Fish Stocking Plan (FERC Article 406)

ES.4.1.6 YRDP Federal Power Act Section 4(e) Conditions

Section 4(e) of the FPA (16 U.S.C. § 797(e)) provides that any license issued by FERC "for a project within a federal reservation shall be subject to and contain such conditions as the Secretary of the responsible federal land management agency deems necessary for the adequate protection and use of the reservation." In accordance with Section 4(e) of the FPA and 18 CFR 5.25(d), the USFS filed with FERC Revised Final FPA Section 4(e) Terms and Conditions for the YRDP on December 2, 2022. The USFS's December 2, 2022 filing of Revised Final Section 4(e) Terms and Conditions was comprised of two parts. Part I included 27 administrative conditions deemed necessary for the administration of NFS lands. Part II included 26 specific resource conditions for protection and utilization of NFS lands, such as special-status species, vegetation management, visual resources, and historic properties among others. They also include conditions specific to the following YRDP facilities:

- Condition No. 33 - Control Project Spills at Our House Diversion Dam
- Condition No. 34 - Control Project Spills at Log Cabin Diversion Dam
- Condition No. 35 - Periodically Close Lohman Ridge Diversion Tunnel
- Condition No. 37 – Log Cabin and Our House Diversion Dams Sediment Management Plan
- Condition No. 38 – Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan

ES.4.2 Narrows Project

In addition to the continued O&M of the existing Narrows Project facilities described in Section 2.3 of this EIR, the Narrows Relicensing Project includes:

1. Project-related changes proposed by Yuba Water;
2. Protective measures proposed by Yuba Water;
3. FERC-recommended modifications of Yuba Water's proposal and additional measures (if any); and
4. All mandatory terms and conditions (if any).

To date, no FERC-recommended modifications or additional measures to Yuba Water's proposal have been identified, and no FPA Section 4(e) Conditions have been recommended by the USFS or others.

Yuba Water does not propose any changes to the existing Narrows Project works or facilities. Yuba Water proposes to continue to operate the Narrows Project in substantial conformance with existing operations, with minor modifications. Yuba Water does not propose any changes to the existing FERC Project Boundary for the Narrows Project.

ES.4.2.1 Proposed Changes to Conditions in the Narrows Project FERC License

For the Narrows Project, Yuba Water proposes to include, with some updates, the following four conditions in the new license that would replace Articles 402 and 411, 405, 403 and 410 in the current license:

- Yuba Water's Narrows Project Proposed Condition 1, Supplemental Flows. This condition would continue the requirements of Article 402 and 411 where Yuba Water shall coordinate with the YRDP to develop a Water Release Plan to define how the two projects would coordinate operations and provide flows to the lower Yuba River.

- Yuba Water's Narrows Project Proposed Condition 2, Ramping Rates. This condition would continue the requirements of Article 405 where Yuba Water's releases from the Narrows 1 Powerhouse shall not result in a rate of change in streamflow greater than flow fluctuation limits required at USGS gage station 11418000, *Yuba River Below Englebright Dam Near Smartsville, CA*, in the license for the YRDP.
- Yuba Water's Narrows Project Proposed Condition 3, Fish Stocking. This condition would continue the requirement of Article 403 where Yuba Water shall provide annually up to 5,000 rainbow trout (half pound each) to be stocked in Englebright Reservoir.
- Yuba Water's Narrows Project Proposed Condition 4, Consult with SHPO and Affiliated Native American Tribes. This condition would continue the requirement in Article 410 where Yuba Water, before starting any land clearing, land-disturbing, or spoil-producing activities in areas in which Yuba Water has not previously conducted a cultural resources survey and consulted with SHPO and affiliated Native American Tribes, shall consult with SHPO and affiliated Native American Tribes and conduct a cultural resources survey of the affected areas.

In addition to the above four conditions that would replace existing conditions, Yuba Water proposes to include the following three new conditions:

- Yuba Water's Narrows Project Proposed Condition 5, Water Surface Elevation in Englebright Reservoir. Yuba Water's operation of the Narrows Project within its reasonable control shall not cause Englebright Reservoir's water surface elevation to be lower than an elevation of 514.0 ft unless necessary for the temporary protection of life, health, property or environmental resources.

- Yuba Water's Narrows Project Proposed Condition 6, Nesting Peregrine Falcon Protection. To the greatest extent feasible, Yuba Water would schedule Narrows Project vegetation clearing, ground-disturbing and loud noise-generating activities outside of the nesting bird season of January 1 through August 15 to avoid take of nesting American peregrine falcons (*Falco peregrinus*).

- Yuba Water's Narrows Project Proposed Condition 7, Bat Management. Yuba Water would, in the first full calendar year after license issuance, document bat roosts and openings large enough to admit bats within the Narrows 1 Powerhouse and tram building. If bats, signs of roosting, or openings are present where staff have a routine presence (i.e., at least daily or weekly), Yuba Water would, where feasible, place humane exclusion devices to prevent occupation of the structure by bats.

ES.5 Agency Roles and Responsibilities

Yuba Water, as the CEQA lead agency, has the principal responsibility for approving and carrying out the Proposed Projects and for ensuring that CEQA requirements and all other applicable regulations are met. The following responsible and trustee state agencies are anticipated to have jurisdiction or permitting authority over some aspects of the Proposed Projects:

- California Department of Fish and Wildlife (CDFW)
- California Department of Water Resources (DWR)
- State Office of Historic Preservation
- State Water Resources Control Board (SWRCB)
- Central Valley Regional Water Quality Control Board (RWQCB)
- California Department of Forestry and Fire Protection (CALFIRE)
- California Department of Transportation
- California Department of Industrial Relations, Division of Occupational Safety and Health

The following regional and local agencies are also potential responsible agencies under CEQA:

- Feather River Air Quality Management District (FRAQMD)
- Northern Sierra Air Quality Management District (NSAQMD)
- Yuba County
- Sierra County
- Nevada County

Additionally, the following Federal agencies are anticipated to have permitting or review authority over portions of the Proposed Projects:

- FERC
- USACE
- USFS
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)

ES.6 Alternatives

CEQA requires an EIR to describe and evaluate a range of reasonable alternatives to the project or to the location of a project that could feasibly attain most of the basic project objectives and would avoid or substantially lessen significant project impacts. The alternatives analysis must include the "No Project Alternative" as a point of comparison. Chapter 3 of this DEIR describes three alternatives to the Proposed Projects, which are analyzed along with the Proposed Projects in Chapters 5 through 24 of this DEIR. In addition to the No Project Alternative, the alternatives considered in this DEIR were developed based on information gathered during the preliminary project design and are summarized below.

ES.6.1 No Project Alternative

The analysis of the No Project Alternative addresses two potential No Project scenarios: (1) Yuba Water would not accept new licenses for either the YRDP or the Narrows Project; and (2) Yuba

Water would not accept a new license for the Narrows Project but would accept the new FERC license for the YRDP. Related to the first potential scenario, Yuba Water also would not be able to obtain one-year FERC licenses for either the YRDP or the Narrows Project under the No Project Alternative. The potential circumstances that could occur under the No Project Alternative with respect to Yuba Water's non-acceptance of the pending new FPA licenses to be issued by FERC are:

(1) Yuba Water could decide not to accept the conditions associated with a new FPA license for both the YRDP and the Narrows Project. In the absence of a hydropower license from FERC, the YRDP and the Narrows Project would discontinue hydropower generation operations. Yuba Water would continue to operate the YRDP and Narrows Project facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities (i.e., no electricity generation facilities) and for flood management purposes. No new environmental PM&E measures would be implemented. Upstream of USACE's Englebright Reservoir, flow and water temperature conditions generally would be similar to those that occur under the CEQA Baseline (Existing Condition), except that there would be reduced fluctuations of Yuba River inflows into Englebright Reservoir and in Englebright Reservoir water surface elevations. Also, weekly fluctuations in reservoir storage would not occur. Downstream of Englebright Reservoir, flow and water temperature conditions in the lower Yuba River would be the same as flows and water temperatures under the CEQA Baseline (Existing Condition).

(2) Yuba Water could decide to accept the conditions associated with a new FPA license for the YRDP, but not for the Narrows Project. Under these circumstances, Yuba Water would be able to meet specified regulatory requirements regarding lower Yuba River instream flows and continue to achieve various components of the agency's mission to provide a source of hydroelectric power, flood risk reduction, and water supplies for both domestic and irrigation purposes, as well as providing benefits for recreation, fish and wildlife habitat. Operations under this scenario would be similar to Proposed Projects operations. The full release capacity of the Narrows Project tunnel and outlet works might still be used to coordinate with the YRDP, augment flows from the Narrows 2 Powerhouse and provide release capabilities to meet required downstream flows if the Narrows 2 Powerhouse and bypasses were not available, such as a tunnel outage. There are a range of options for releases of water from the remaining facilities of the Narrows Project, but all the most likely options would be either no reduction or relatively small reductions in release capacity and a change in release point. The only major change would be a loss of qualifying small hydropower renewable power sold by Yuba Water, as the Narrows Project is classified as a renewable energy small hydropower facility under the state's Renewables Standard Portfolio.

ES.6.2 Alternative 1 (Yuba Water's October 31, 2022 Offer of Settlement for the YRDP)

FERC's March 8, 2021 AIR Item 3 requested that Yuba Water evaluate options for the equitable allocation of water to provide cooler water temperatures in the lower Yuba River at times by consulting with PG&E (Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310) and Lower Drum Hydroelectric Project (FERC Project No. 14530)) and Nevada Irrigation District (NID) (Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and Deer Creek Hydroelectric Project (FERC Project No. 14531)) and develop an agreed-upon analysis of the amount of additional water from either storage or transfers necessary in Dry and/or Critically Dry years (or

combination of dry type years) to maintain cooler water in the lower Yuba River for federally listed species protection from July through November. FERC also sent coordinated AIRs to NID and PG&E on March 8, 2021. Yuba Water developed its Offer of Settlement in response to FERC's AIR Item 3 within the context of FERC's coordinated request to Yuba Water, NID and PG&E.

Alternative 1 includes an integrated suite of measures to be implemented by Yuba Water, PG&E, and NID, in coordination with each other. Yuba Water developed Alternative 1 as a proposal for the YRDP and upstream projects to equitably allocate water to provide cooler water temperatures in the lower Yuba River for federally listed species protection from July through November. Alternative 1 proposes to reoperate the release of 15,600 acre-feet of additional flow from the Yuba-Bear/Drum-Spaulding (YB/DS) projects, during Dry and Critically Dry years. This reoperation would only be possible if water is made available by the YB/DS projects, which is subject to approval of a new license term by FERC. Because Yuba Water cannot impose operational changes on PG&E's and NID's upstream projects, Alternative 1 is a conditional alternative that is subject to FERC's acceptance and implementation.

Alternative 1 would include all non-flow components of the YRDP and all Narrows Project operations under the Proposed Projects, as described in DEIR Chapter 2, Project Description. Compared to the Proposed Projects, Alternative 1 includes modifications to YRDP operations and additional non-flow measures.

Specifically, Alternative 1 includes two non-flow components and two flow components, to be implemented as an integrated suite of actions by Yuba Water in coordination with PG&E and NID, consistent with proposed license conditions in new licenses issued by FERC. These are described below.

- Yuba Water would use the upper intake at New Bullards Bar Dam during the spring (March, April, and May) and the lower intake the remainder of the year. To implement this non-flow action (referred to as the NBBD Dual Intake), Alternative 1 would include a new proposed license condition for the YRDP (see Chapter 3).
- Yuba Water would manage flows into and out of Englebright Reservoir to increase the target water surface elevation from 519 ft msl to 525 ft msl from August 25 through September 10, maintaining the target elevation of 525 ft msl through October 15, and implementing an October 16-31 ramp-down. To implement this non-flow action, Alternative 1 would include a new proposed license condition for the YRDP (see Chapter 3).
- The YB/DS projects would collectively release an additional 15,600 acre-feet of water in Dry or Critically Dry years, for reregulation and release by Yuba Water into the lower Yuba River during September 1 through October 15. NID and PG&E would decide among themselves how to allocate responsibility for the additional 15,600 acre-feet. To implement this flow action, Alternative 1 would include a new proposed license condition for the YB/DS (see Chapter 3).

- As noted above, the Yuba-Bear and Drum-Spaulding Projects would collectively provide 15,600 acre-ft of water during April and early May of Dry and Critically Dry years. Yuba Water would release this water to provide increased flows of 175 cfs to the lower Yuba River from September 1 through October 15 during Dry and Critically Dry years. To implement this non-flow action, Alternative 1 would include a new proposed license condition for the YRDP (see Chapter 3).

ES.6.3 Alternative 2 - SWRCB Draft Bay-Delta Plan Update Regulatory Pathway Scenario

Yuba Water developed Alternative 2 in response to comments from the SWRCB on the Notice of Preparation (NOP) for this DEIR. For many years, the SWRCB has been considering potential amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed. On October 25, 2024, the SWRCB issued a draft of this plan, called the Draft Bay-Delta Plan Update. According to the SWRCB, the Draft Bay-Delta Plan Update "regulatory pathway" is ultimately intended to provide benefits to the Sacramento-San Joaquin Delta (Delta) by providing higher flows to support a connected and functioning ecosystem and to benefit native fish in the Sacramento Valley and the Delta. Relative to the Proposed Projects, the SWRCB Draft Bay-Delta Plan Update involves an entirely separate process that is not specific to the FERC relicensing of the YRDP or the Narrows Project, or the issuance of new FPA licenses by FERC. However, because Yuba Water has been and remains involved in supporting the Draft Bay-Delta Plan Update process, this DEIR includes an analysis of Alternative 2 to provide insight into the potential impacts associated with a possible future "regulatory pathway" SWRCB Draft Bay-Delta Plan Update.

The SWRCB proposes a regulatory pathway that involves a 55% unimpaired flow requirement for the Bay-Delta Plan Update. If a 55% unimpaired flow requirement were adopted, it would be reasonable to expect that all of the FERC relicensing projects (i.e., YRDP, Narrows Project and the YB/DS projects) would be required (through WQCs) to operate in accordance with the conditions of the new FERC licenses that would be in effect, and conduct operations necessary to comply with a 55% unimpaired flow requirement.

Alternative 2 would include all non-flow components of the Proposed Projects. Similarly, Alternative 2 includes the same modeled operational assumptions as the Proposed Projects, including FERC's (2019) FEIS flow requirements in the North Yuba, Middle Yuba, and Yuba rivers that will become part of a new license for the YRDP and use of the variable-elevation intake for the New Colgate Powerhouse.

Compared to the Proposed Projects, Alternative 2 includes modifications to YRDP and Narrows Project operations, as well as similar operational changes to the upstream YB/DS projects under new FERC licenses, to comply with the following additional regulatory requirements under the SWRCB Draft Bay-Delta Plan Update:

- A requirement to provide 55% of the unimpaired Middle Yuba River
- A requirement to provide 55% of the unimpaired South Yuba River flow

- A requirement to provide 55% of the unimpaired Yuba River flow at its confluence with the Feather River
- A minimum end-of-September New Bullards Bar Reservoir storage of 600 TAF in Wet, Above Normal, and Below Normal years
- A minimum end-of-September New Bullards Bar Reservoir storage of 400 TAF in Dry and Critical years

Alternative 2 includes a representative operational scenario that could be implemented in response to the SWRCB Draft Bay-Delta Plan Update. Among other components, this scenario includes curtailment of agricultural surface water supply deliveries, as necessary, to meet the 600 TAF carryover storage requirement in New Bullards Bar Reservoir in Wet, Above Normal, and Below Normal years. In Dry and Critical years, Yuba Water would continue to curtail agricultural surface water deliveries, as necessary, to meet its existing carryover storage requirement of 440 TAF in the first dry or critical year of a sequence, and 400 TAF in subsequent dry or critical years. Agricultural surface water supplies also would be curtailed, as necessary, to meet the 55% of the unimpaired flow at the Marysville Gage.

ES.6.4 Comparison of Alternatives and Environmentally Superior Alternative

DEIR Chapter 25, Other CEQA Considerations, contains a comparison of the potential environmental impacts of the Proposed Projects and the alternatives, including the No Project Alternative, along with a comparison of consistency with the Proposed Projects objectives described in Section ES.3. The No Project Alternative would avoid the environmental impacts associated with proposed YRDP construction activities and new YRDP facilities that would occur under the Proposed Projects and Alternatives 1 and 2. However, the No Project Alternative would have significant and unavoidable individual and cumulative impacts related to power production and greenhouse gas emissions due to the complete loss of hydropower generation.

Alternatives 1 and 2 would include the same YRDP construction activities and non-flow YRDP and Narrows Project operations activities as the Proposed Projects; therefore, they would have the same environmental impacts associated with those activities. Impacts related to flow-based operations would generally be similar under the Proposed Projects and Alternative 1, though Alternative 1 would provide additional environmental benefits, while Alternative 2 would have more severe environmental impacts. Alternative 2 would result in more frequent and more severe surface water supply shortages that would lead to increased groundwater pumping such that groundwater levels would fall below local management levels. Additionally, Alternative 2 would result in significant losses in hydropower generation, which would in turn result in substantially higher indirect GHG emissions compared to the Proposed Projects and Alternative 1. When comparing the alternatives to the Proposed Projects objectives, Alternative 1 would meet all objectives and the Proposed Projects would meet most objectives. By contrast, Alternative 2 and the No Project Alternative would not meet a number of the Proposed Projects objectives.

As described in DEIR Chapter 25, CEQA Guidelines Section 15126(e)(2) requires identification of an "environmentally superior alternative." Based on the comparison of relevant impacts of the

alternatives, as described in Chapter 25, Alternative 1 is considered the environmentally superior alternative.

ES.7 Areas of Controversy and Issues to Be Resolved

Areas of controversy have been identified for the Proposed Projects, based on input provided as part of the FERC relicensing process for the YRDP and through comments provided during both the 2022 and 2024 CEQA scoping processes. Regarding the YRDP, the following areas of controversy have been identified to date:

- **Alternatives Analysis** – A total of ten alternatives were suggested by various parties, along with requests to evaluate each of these alternatives in the DEIR. In a number of cases, the suggested alternative was found to be (1) not feasible; (2) not warranted or justifiable under the FPA (as determined by FERC); (3) not protective or beneficial to fisheries resources; or (4) incongruous with Yuba Water's mission and because it would not achieve most of Yuba Water's project objectives. Chapter 3, Alternatives, presents the alternatives that were analyzed, which are summarized in Section ES.6 above. Chapter 3 also has additional information and supporting rationale regarding why specific alternatives were not evaluated in detail.
- **Clean Water Act Section 401 Compliance Issues -** The uncertainty of future CWA regulatory constraints imposed by the SWRCB's WQC Conditions that will be issued for the YRDP and the Narrows Project is an issue of concern with respect to potential changes to YRDP operations, and resultant changes in reservoir storage, flow release patterns, and water temperature regimes in the lower Yuba River.
- **Bay-Delta Water Quality Control Plan Update -** The uncertainty of future regulatory constraints associated with the SWRCB's Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and its Tributaries, Delta Eastside Tributaries, and Delta (Bay-Delta Plan Update), and the potential for such regulatory constraints to adversely affect YRDP operations within the Yuba River Watershed, as well as flow and water temperature throughout the Central Valley, are of concern due to the potential for direct and redirected impacts on fisheries resources, water supply, water quality, and potentially other environmental resources.
- **Suggested Mitigation Measures -** Some commenters suggested that the DEIR should consider mitigation for YRDP impacts related to Large Woody Material (LWM) and sediment management on the North Yuba River below New Bullards Bar Dam that were not addressed in the FERC FEIS. Some commenters also suggested that that EIR should consider implementation of lower Yuba River floodplain restoration activities to accompany the riparian vegetation planning that was recommended by FERC in the 2019 FEIS.

Although this EIR evaluates multiple alternatives to the Proposed YRDP Project, Yuba Water ultimately only has discretion to accept the license that FERC issues for the YRDP, subject to any additional regulatory constraints issued by the SWRCB, or decline the license (evaluated as the No Project Alternative). Implementing Alternatives 1 and 2 would require action by entities other than Yuba Water, but those alternatives are evaluated in this EIR to inform those entities' decisions

during the relicensing process. To date, no specific areas of controversy or issues to be resolved have been identified for the Narrows Project.

ES.8 Public Review and Final EIR

This DEIR is being distributed to responsible and other potentially interested agencies, stakeholder organizations, and individuals for a 45-day review period. This distribution ensures that interested parties have an opportunity to express their views regarding the project's environmental impacts and ensures that information pertinent to permits and approvals is provided to decision makers and CEQA responsible and trustee agencies by the lead agency.

Yuba Water expects that the SWRCB will be a CEQA responsible agency. Yuba Water also expects that CDFW will be involved in the CEQA process because it is both a trustee agency for the state's fish and wildlife resources and a responsible agency for administering the California Endangered Species Act (CESA) and other provisions of the California Fish and Game Code that afford protection to the state's fish and wildlife public resources.

A Notice of Completion for this DEIR has been filed with the State Clearinghouse, in accordance with CEQA Guidelines Section 15085, and a Notice of Availability of this DEIR has been posted in accordance with CEQA Guidelines Section 15087. A public notice was sent to the Marysville Appeal-Democrat, the Mountain Messenger, and the Union on and to all previous commenters that have requested information regarding the proposed project. A list of Agencies and Tribes to which notice is distributed is available in Appendix ES-1.

Copies of this Draft EIR are also available to review at the Yuba Water office any business day between the hours of 9:00 a.m. and 4:00 p.m. at the address below or on the project website at: https://www.yubawater.org/.

Yuba County Water Agency
1220 F Street
Marysville, CA 95901

Copies of the Draft EIR are also available at the county offices of Yuba, Nevada, and Sierra Counties, and at the Yuba County Library in Marysville and the Nevada County Library in Grass Valley. The public review period for providing comments on this DEIR is from August 1, 2025 until close of business at 5:00 p.m. on September 15, 2025. Written comments or questions concerning the DEIR must be directed to the name and address below via postal mail or email by no later than 4:00 p.m. on September 15, 2025:

John James
Yuba County Water Agency
1220 F Street
Marysville, CA 95901
jjames@yubawater.org

After the 45-day public review period, comments regarding environmental issues received in response to the DEIR will be addressed in a response to comments document, which, together with

the DEIR and any changes to the text made in response to comments, or initiated by staff, will constitute the Final EIR (FEIR). After a public hearing on the proposed project, Yuba Water will review the FEIR, staff recommendations, and public testimony prior to certifying the FEIR and deciding whether to approve or deny the proposed project. Should Yuba Water approve the project even if the FEIR identifies significant impacts that cannot be mitigated, Yuba Water must state in writing the reasons for its actions. In accordance with CEQA Guidelines Section 15093(c), a Statement of Overriding Considerations must be included in the record of the project approval and mentioned in the Notice of Determination (NOD). The NOD shall be filed within five working days of approval with the State Clearinghouse and with the County Clerks of Yuba, Sierra, and Nevada Counties.

ES.9 Summary of Potential Impacts and Mitigation

CEQA requires that the environmental analysis contained in the DEIR also include a summary of a proposed project and its consequences, including an identification of each potentially significant impact of the project and its level of impact, proposed mitigation measures if applicable, and the level of impact after any mitigation measures are implemented. **Table ES-1** presents a summary of the impacts and mitigation measures identified for the Proposed Projects. A full description of each impact and mitigation measure is found in the appropriate technical EIR chapters, from Chapter 5 to Chapter 24.

ES.9.1 Mitigation Measures

The Proposed Narrows Project would not result in any potentially significant impacts. For impacts of the Proposed YRDP Project determined to be significant or potentially significant, the DEIR has identified feasible mitigation measures that would avoid or reduce most of these impacts to a level that would be less than significant. **Table ES-1** includes these mitigation measures, which were identified for the following environmental issues:

- Non-Fisheries Biological Resources – Special-status species, sensitive natural communities, and conflict with local biological resource ordinances (MM-BIO-1 through MM-BIO-16)
- Visual Resources – Light and glare during construction (MM-VIS-1)
- Air Quality – Conflicts with applicable air quality plans; cumulatively considerable net increases in criteria pollutants; other emissions (MM-AQ-1, MM-AQ-2)
- Wildfire – Emergency evacuations; exposure of people or structures to wildland fire risk (MM-WF-1)
- Noise – Noise from construction activities (MM-NOISE-1, MM-NOISE-2)
- Utilities - Relocation or Construction of New or Expanded Infrastructure (MM-UTIL-1)

ES.9.2 Significant and Unavoidable Impacts

Under CEQA, an EIR shall discuss any significant effect on the environment that cannot be avoided if a project is implemented. CEQA Guidelines § 15126.2(c) further specifies that

significant and unavoidable effects include those that can be mitigated but not reduced to a level of insignificance.

Significant and unavoidable impacts were described within each technical chapter of the DEIR, where appropriate. **Table 25.3-1** in Chapter 25, Other CEQA Issues, summarizes the significant and unavoidable impacts identified under the Proposed Projects and the alternatives. The Proposed Narrows Project would not result in any significant and unavoidable impacts. For the proposed YRDP Project, significant and unavoidable impacts were identified for the following environmental issues:

- Air Quality and Greenhouse Gas Emissions
- Transportation

These significant and unavoidable YRDP impacts would also occur under Alternative 1 and Alternative 2. In addition, the YRDP under Alternative 2 would have significant or potentially significant and unavoidable impacts on Surface Water Resources, Groundwater Resources, Energy, Surface Water Quality, Fisheries Resources, and Recreation, and the Narrows Project under Alternative 2 would have significant and unavoidable impacts on Energy. Under the No Project Alternative, the YRDP and the Narrows Project would have significant or potentially significant and unavoidable impacts on Energy and Air Quality and Greenhouse Gas Emissions.

ES.9.3 Cumulative Impacts

This DEIR provides an analysis of cumulative impacts of the Proposed Projects taken together with other past, present, and probable future projects producing related impacts, as required by CEQA Guidelines Section 15130. Cumulative impacts are defined in CEQA Guidelines Section 15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Each resource chapter of this DEIR discusses whether there would be a potentially cumulative significant environmental impact from the Proposed Projects' effects in combination with those of closely related past, present, and reasonably foreseeable probable future projects and determines whether the Proposed Projects or a Project Alternative could make a cumulatively considerable contribution to any cumulatively significant impacts. "Cumulatively considerable", as defined in CEQA Guidelines Section 15130, means that the incremental effects of the individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

Each resource chapter in this DEIR contains a Cumulative Impact Assessment that describes the cumulative condition with the Proposed Projects and the alternatives, then assesses the cumulative contribution of the Proposed Projects and alternatives. **Tables 25.5-1** and **25.5-2** in Chapter 25, Other CEQA Issues, summarize the significance of the cumulative impacts under the Proposed Projects and the alternatives for the YRDP and Narrows Project, respectively, for each environmental issue analyzed in this DEIR. The proposed Narrows Project would not result in any potentially significant cumulative impacts. For the proposed YRDP Project, significant cumulative impacts were identified for the following environmental issues:

- Air Quality and Greenhouse Gas Emissions
- Transportation

Table ES-1. Summary of Impacts and Mitigation Measures, Proposed Projects.

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Chapter 5 - Surface Water Resources			
EXISTING CONDITION			
YRDP Impact SW-PP-1: Rate or Amount of Surface Runoff from YRDP Operations	LTS	None required.	--
YRDP Impact SW-PP-2: Impede or Redirect Flood Flows	LTS/PB	None required.	--
YRDP Impact SW-PP-3: Water Supply Shortages from YRDP Operations	LTS	None required.	--
YRDP Impact SW-PP-4: Yuba Accord Transfers Resulting from YRDP Operations	LTS	None required.	--
Narrows Impact SW-PP-1: Rate or Amount of Surface Runoff from Narrows Operations	LTS	None required.	--
Narrows Impact SW-PP-2: Impede or Redirect Flood Flows	LTS	None required.	--
Narrows Impact SW-PP-3: Water Supply Shortages from Narrows Operations	LTS	None required.	--
Narrows Impact SW-PP-4: Yuba Accord Transfers Resulting from Narrows Operations	LTS	None required.	--
YRDP Cumulative Impact SW-PP-1: Impacts to surface water resources	LTS	--	--
Narrows Cumulative Impact SW-PP-1: Impacts to surface water resources	LTS	--	--
FUTURE BASELINE			
YRDP Impact SW-FPP-1: Rate or Amount of Surface Runoff from YRDP Operations	LTS	None required.	--
YRDP Impact SW-FPP-2: Impede or Redirect Flood Flows	LTS/PB	None required.	--
YRDP Impact SW-FPP-3: Water Supply Shortages from YRDP Operations	LTS	None required.	--
YRDP Impact SW-FPP-4: Yuba Accord Transfers Resulting from YRDP Operations	LTS	None required.	--
Narrows Impact SW-FPP-1: Rate or Amount of Surface Runoff from Narrows Operations	LTS	None required.	--
Narrows Impact SW-FPP-2: Impede or Redirect Flood Flows	LTS	None required.	--
Narrows Impact SW-FPP-3: Water Supply Shortages from Narrows Operations	LTS	None required.	--
Narrows Impact SW-FPP-4: Yuba Accord Transfers Resulting from Narrows Operations	LTS	None required.	--
Chapter 6 - Groundwater Resources			
EXISTING CONDITION			
YRDP Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Narrows Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators	LTS	None required.	--
YRDP Cumulative Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators	LTS	--	--
Narrows Cumulative Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators	LTS	--	--
FUTURE BASELINE			
YRDP Impact GW-FPP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators	LTS	None required.	--
Narrows Impact GW-FPP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators	LTS	None required.	--
Chapter 7 - Power Generation and Energy Consumption			
EXISTING CONDITION			
YRDP Impact EN-PP-1: Change in Monthly Generation from YRDP Operations	LTS	None required.	--
YRDP Impact EN-PP-2: Change in Monthly Generation Capacity from YRDP Operations	LTS	None required.	--
YRDP Impact EN-PP-3: Reduction in Generation-Related Revenue from YRDP Operations	LTS	None required.	--
YRDP Impact EN-PP-4: Energy Consumption by YRDP Construction Activities	LTS	None required.	--
YRDP Impact EN-PP-5: Energy Consumption by YRDP Operations	LTS	None required.	--
YRDP Impact EN-PP-6: YRDP Construction Conflicts with Renewable Energy or Energy Efficiency Plans	LTS	None required.	--
YRDP Impact EN-PP-7: YRDP Operational Conflicts with Renewable Energy or Energy Efficiency Plans	LTS	None required.	--
Narrows Impact EN-PP-1: Change in Monthly Generation from Narrows 1 Operations	LTS	None required.	--
Narrows Impact EN-PP-2: Change in Monthly Generation Capacity from Narrows 1 Operations	LTS	None required.	--
Narrows Impact EN-PP-3: Reduction in Generation-Related Revenue from Narrows 1 Operations	LTS	None required.	--
Narrows Impact EN-PP-4: Energy Consumption by Narrows 1 Operations	LTS	None required.	--
Narrows Impact EN-PP-5: Narrows Operational Conflicts with Renewable Energy or Energy Efficiency Plans	LTS	None required.	--
YRDP Cumulative Impact EN-PP-1: YRDP impacts to power production and energy consumption	LTS	--	--
Narrows Cumulative Impact EN-PP-1: Narrows Project impacts to power production and energy consumption	LTS	--	--
FUTURE BASELINE			
YRDP Impact EN-FPP-1: Change in Monthly Generation from YRDP Operations	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
YRDP Impact EN-FPP-2: Change in Monthly Generation Capacity from YRDP Operations	LTS	None required.	--
YRDP Impact EN-FPP-3: Reduction in Generation-Related Revenue from YRDP Operations	LTS	None required.	--
Narrows Impact EN-FPP-1: Change in Monthly Generation from Narrows 1 Operations	LTS	None required.	--
Narrows Impact EN-FPP-2: Change in Monthly Generation Capacity from Narrows 1 Operations	LTS	None required.	--
Narrows Impact EN-FPP-3: Reduction in Generation-Related Revenue from Narrows 1 Operations	LTS	None required.	--
Chapter 8 - Surface Water Quality			
EXISTING CONDITION			
YRDP Impact WQ-PP-1: Impacts on Surface Water Quality from Modification of Power Generation- and Water Conveyance-Related Facilities for the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-2: Impacts on Surface Water Quality from Implementation of the YRDP Recreation Facilities Plan.	LTS	None required.	--
YRDP Impact WQ-PP-3: Impacts on Surface Water Quality from Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan.	LTS	None required.	--
YRDP Impact WQ-PP-4: Impacts on Surface Water Quality from Other YRDP Implementation Plans.	LTS	None required.	--
YRDP Impact WQ-PP-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-6: Impacts on Englebright Reservoir Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-8: Impacts on Oregon Creek Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-9: Impacts on the Middle Yuba River Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-10: Impacts on Upper Yuba River Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-11: Impacts on Lower Yuba River Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-13: Impacts on Surface Water Quality from Other Operations and Maintenance of the YRDP.	LTS	None required.	--
YRDP Impact WQ-PP-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.	LTS	None required.	--
YRDP Impact WQ-PP-15: Consistency with Water Quality Control Plans.	NI	None required	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Narrows Impact WQ-PP-1: Impacts on Surface Water Quality from Operation of the Narrows Project.	LTS	None required.	--
YRDP Cumulative Impact WQ-PP-1. Cumulative Impacts on Surface Water Quality from Construction, Operation, and Maintenance of the YRDP	LTS	--	--
Narrows Cumulative Impact WQ-PP-1. Cumulative Impacts on Surface Water Quality from Operation and Maintenance of the Narrows Project	LTS	--	--
FUTURE BASELINE			
YRDP Impact WQ-FPP-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-6: Impacts on Englebright Reservoir Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-8: Impacts on Oregon Creek Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-9: Impacts on the Middle Yuba River Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-10: Impacts on Upper Yuba River Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-11: Impacts on Lower Yuba River Water Quality from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of the YRDP.	LTS	None required.	--
YRDP Impact WQ-FPP-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.	LTS	None required.	--
Narrows Impact WQ-FPP-1: Impacts on Surface Water Quality from Operation of the Narrows Relicensing Project.	LTS	None required.	--
Chapter 9 - Fisheries Resources			
EXISTING CONDITION			
YRDP Impact FISH-PP-1: Construction-related impacts in areas upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-PP-2: Construction-related impacts in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-PP-3: Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam.	LTS/PB	None required.	--
YRDP Impact FISH-PP-4: Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-PP-5: Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-PP-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-PP-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River.	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
YRDP Impact FISH-PP-8: Operations-related impacts on fall-run Chinook salmon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-PP-9: Operations-related impacts on steelhead in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-PP-10: Operations-related impacts on green sturgeon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-PP-11: Operations-related impacts on lamprey in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-PP-12: Operations-related impacts on white sturgeon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-PP-13: Operations-related impacts on other fish species in the lower Yuba River	LTS	None required.	--
YRDP Impacts FISH-PP-14: Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir.	LTS	None required.	--
YRDP Impacts FISH-PP-15: Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir.	LTS	None required.	--
YRDP Impacts FISH-PP-16: Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries	LTS	None required.	--
YRDP Impacts FISH-PP-17: Other operations-related impacts on YRDP reservoir fisheries in areas upstream of Englebright Dam.	LTS	None required.	--
YRDP Impacts FISH-PP-18: Other operations-related impacts on fisheries resources in reaches upstream of Englebright Dam.	LTS/PB	None required.	--
YRDP Impacts FISH-PP-19: Other operations-related impacts on fisheries resources in the lower Yuba River.	LTS	None required.	--
YRDP Impacts FISH-PP-20: Operations-related impacts on special-status fish species in areas downstream of the lower Yuba River.	LTS	None required.	--
YRDP Impacts FISH-PP-21; YRDP consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.	LTS	None required.	--
Narrows Impact FISH-PP-1: Construction-related impacts in areas upstream of Englebright Dam.	NI	None required.	--
Narrows Impact FISH-PP-2: Construction-related impacts in the lower Yuba River.	NI	None required.	--
Narrows Impacts FISH-PP-3: Operations-related impacts in areas upstream of Englebright Dam.	LTS	None required.	--
Narrows Impacts FISH-PP-4: Operations-related impacts in the lower Yuba River.	LTS	None required.	--
Narrows Impacts FISH-PP-5: Narrows Project consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.	LTS	None required.	--
YRDP Cumulative Impact FISH-PP-1: Cumulative impacts to fisheries resources in the Project Area.	LTS	--	--
Narrows Cumulative Impact FISH-PP-1: Cumulative impacts to fisheries resources in the Project Area.	LTS	--	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
FUTURE BASELINE			
YRDP Impact FISH-FPP-3: Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam.	LTS/PB	None required.	--
YRDP Impact FISH-FPP-4: Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-FPP-5: Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-FPP-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.	LTS	None required.	--
YRDP Impact FISH-FPP-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-FPP-8: Operations-related impacts on fall-run Chinook salmon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-FPP-9: Operations-related impacts on steelhead in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-FPP-10: Operations-related impacts on green sturgeon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-FPP-11: Operations-related impacts on lamprey in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-FPP-12: Operations-related impacts on white sturgeon in the lower Yuba River.	LTS	None required.	--
YRDP Impact FISH-FPP-13: Operations-related impacts on other fish species in the lower Yuba River	LTS	None required.	--
YRDP Impacts FISH-FPP-14: Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir.	LTS	None required.	--
YRDP Impacts FISH-FPP-15: Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir.	LTS	None required.	--
YRDP Impacts FISH-FPP-16: Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries	LTS	None required.	--
YRDP Impacts FISH-FPP-17: Other operations-related impacts on YRDP reservoir fisheries in areas upstream of Englebright Dam.	LTS	None required.	--
YRDP Impacts FISH-FPP-18: Other operations-related impacts on fisheries resources in reaches upstream of Englebright Dam.	LTS/PB	None required.	--
YRDP Impacts FISH-FPP-19: Other operations-related impacts on fisheries resources in the lower Yuba River.	LTS	None required.	--
YRDP Impacts FISH-FPP-20: Operations-related impacts on special-status fish species in areas downstream of the lower Yuba River.	LTS	None required.	--
YRDP Impacts FISH-FPP-21; YRDP consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.	LTS	None required.	--
Narrows Impacts FISH-FPP-3: Operations-related impacts in areas upstream of Englebright Dam.	LTS	None required.	--
Narrows Impacts FISH-FPP-4: Operations-related impacts in the lower Yuba River.	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Narrows Impacts FISH-FPP-5: Narrows Project consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.	LTS	None required.	--
Chapter 10 - Non-Fisheries Biological Resources			
EXISTING CONDITION – AREAS UPSTREAM OF ENGLEBRIGHT DAM			
YRDP Impact BIO-PP-1: Proposed YRDP Construction Impacts on Special-Status Species	S	**MM-BIO-1:** Project Footprint constrains work to the minimum required to get the work done and directs as much as possible to occur in previously disturbed locations, as well as flagging the bounds of work to keep construction activities from wandering outside the boundaries. This will minimize loss of habitat and individuals of the species. **MM-BIO-2:** Garbage and Trash keeps work areas free of garbage, including microtrash, which can damage habitat, especially if it spreads outside of the work areas to surrounding habitats. Some species may also eat garbage, which can make them sick or even kill them. Alternatively, species feeding on garbage may become dependent on or too socialized to humans, which can make them pests and/or unable to exist in the wild. **MM-BIO-3:** Vehicular Best Management Practices will keep vehicles on established roads and other areas for driving and fueling/maintenance, as well as restrain the speed of the vehicles. This will limit destruction of habitat from crushing and fuel spills, as well as collisions that can cause injury or death of species on or near roads and other construction areas. **MM-BIO-4:** Clean Fill will minimize the use of imported fill, and if needed, imported fill will be from clean sites and weed-free. This will limit secondary impacts to work areas and the species that inhabit them by preventing the introduction of non-native species and/or contaminated fill which would degrade sites. **MM-BIO-5:** Worker Environmental Awareness Program will provide all workers on projects with information on the special-status species that may be on or near the work area and the requirements for their protection. This training assists in the implementation of required protective measures, such that they are effective in protecting species and habitat, as required by the CEQA document (as well as license measures, management plans and other permits). **MM-BIO-6:** Flagging Sensitive Resources would mark for avoidance any sensitive resources that need to be retained in or near work areas to keep equipment and workers out of known occurrences of special-status species (such as special-status plants), sensitive habitats (such as milkweed occurrences) or other sensitive areas (such as wetlands or riparian vegetation) during project activities. This will prevent direct harm to species, such as death or injury, and indirect, such as damage to habitat or disturbance by vibrations or dust.	LTSM

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
		MM-BIO-7: Minimization of Vegetation Removal would limit any removal or disturbance of vegetation to the minimum necessary, preventing destruction or damage to special-status species habitat by project activities. Additionally, oaks with a diameter at breast height (DBH) of 6 inches or greater and native trees with a DBH of 30 inches or greater will be avoided, as well as other sensitive habitats. This would include flagging/fencing of riparian habitat, other sensitive habitats, and larger oaks and native trees. **MM-BIO-8:** Special-Status Semi-Aquatic Species Protection requires clearance surveys of appropriate habitats for semi-aquatic species. For work under the Sediment Management Plan, species will be relocated. For all other work, species will be allowed to leave the area of their own volition, per **MM-BIO-13**. These sweeps prevent direct harm to species via trampling, crushing or other injury, as well as limiting non-flow-related indirect harm by pausing work until species clear the work area. **MM-BIO-9:** Avoid Work in Flowing Water would prevent equipment, except pumps, from being used in flowing water. This protects fouling of both work areas and downstream habitats by sediment or other materials that would be stirred up by equipment. Sensitive aquatic and semi-aquatic species may be harmed or their habitat damaged by sediment or other plumes of material, as well as leakage or sloughing of materials off equipment in flowing water. **MM-BIO-10:** Migratory Bird and Raptor Surveys requires any clearing and/or construction activities taking place between February 1 and August 31 have nesting bird surveys occur no more than a week prior to start. If active nests are located a protective buffer will be established for the duration of the work or until the nest is inactive. Construction activities can directly remove or destroy nests, but may also cause nest abandonment or lower chick success due to disturbance. **MM-BIO-11:** No Net Loss of Sensitive Habitat mandates that any permanent loss of sensitive communities, as identified in this document, would be mitigated for at a 1:1 ratio. This prevents permanent destruction of already rare habitat, such as wetlands and riparian communities, which often serves as the habitat for special-status plants and wildlife, as well. **MM-BIO-12:** Pre-construction Surveys will identify occurrences of special-status species or their habitats in areas that have not been surveyed recently, such that impacts to species and habitat may be more accurately determined and required avoidance and mitigation measures properly employed prior to and during activities. **MM-BIO-13:** Special-status Wildlife Species - If special-status wildlife enters a work area, they will be allowed to move out on their own and work will be paused in the area of the species, which will protect the species from death or injury from workers and equipment and other impacts of the work, such as noise, dust or vibrations.	

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
		MM-BIO-14: Excavations require that unattended excavations are covered, surrounded by exclusionary fencing, or have an escape ramp such that wildlife does not get trapped in an excavation. Excavations would also be checked prior to the start of excavations. These actions prevent small wildlife from being killed or injured during excavation activities. **MM-BIO-15:** Avoidance of Aquatic Habitat requires that all impacts to delineated aquatic resources would be limited to the amount necessary for completion of work activities. This prevents death or injury of species within these areas, as well as destruction or damage to their aquatic habitat, which is also a sensitive resource. **MM-BIO-16:** Bat Protections requires that Project facilities will be surveyed for bats (if they have not been already) and humane exclusionary devices put in place between November 1 and February 28.	
YRDP Impact BIO-PP-2: Proposed YRDP Operations Impacts on Special-Status Species	LTS	None required.	--
YRDP Impact BIO-PP-3: Proposed Construction Impacts on Riparian Habitat and Sensitive Natural Communities	S	Mitigation Measures **MM-BIO-1** through **MM-BIO-7**, **MM-BIO-11**, **MM-BIO-12**, **MM-BIO-15**.	LTSM
YRDP Impact BIO-PP-4: Proposed Operations Impacts on Riparian Habitat and Sensitive Natural Communities	B	None required.	--
YRDP Impact BIO-PP-5: Proposed Construction Impacts on Wildlife Movement	LTS	None required.	--
YRDP Impact BIO-PP-6: Proposed Operations Impacts on Wildlife Movement	LTS	None required.	--
YRDP Impact BIO-PP-7: Proposed Construction Conflict With Local Policies or Ordinances Protecting Biological Resources	S	Mitigation Measures **MM-BIO-1** through **MM-BIO-15.**	LTSM
YRDP Impact BIO-PP-8: Proposed Operations Conflict With Local Policies or Ordinances Protecting Biological Resources	LTS	None required.	--
EXISTING CONDITION – LOWER YUBA RIVER			
YRDP Impact BIO-PP-9: Proposed YRDP Operations Impacts on Special-Status Species	LTS	None required.	--
YRDP Impact BIO-PP-10: Proposed YRDP Operations Impacts on Riparian Habitat and Sensitive Natural Communities	B	None required.	--
YRDP Impact BIO-PP-11: Proposed YRDP Operations Impacts on Wildlife Movement Corridors	LTS	None required.	--
YRDP Impact BIO-PP-12: Proposed YRDP Operations (excluding flows) Conflict With Local Policies or Ordinances Protecting Biological Resources	LTS	None required.	--
Narrows Impact BIO-PP-1: Operations Impacts on Special-Status Species	LTS	None required.	--
Narrows Impact BIO-PP-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities	NI	None required.	--
Narrows Impact BIO-PP-3: Operations (excluding flows) Impacts on Wildlife Movement Corridors	LTS	None required.	

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Narrows Impact BIO-PP-4: Operations Conflict With Local Policies or Ordinances Protecting Biological Resources	LTS	None required.	--
YRDP Cumulative Impact BIO-PP-1: Potential for significant cumulative non-fisheries biological impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact BIO-PP-1: Potential for significant cumulative non-fisheries biological impacts resulting from the Narrows Project.	LTS	--	--
FUTURE BASELINE – AREAS UPSTREAM OF ENGLEBRIGHT DAM			
YRDP Impact BIO-FPP-2: Proposed YRDP Impacts on Riparian Habitat and Sensitive Natural Communities	LTS	None required.	--
YRDP Impact BIO-FPP-4: Proposed YRDP Conflict With Local Policies or Ordinances Protecting Biological Resources	B	None required.	--
FUTURE BASELINE – LOWER YUBA RIVER			
YRDP Impact BIO-FPP-9: Operations Impacts on Special-status Species	LTS	None required.	--
YRDP Impact BIO-FPP-10: Operations Impacts on Riparian Habitat and Sensitive Nature Communities	B	None required.	--
Narrows Impact BIO-FPP-1: Operations Impacts on Special-status Species	LTS	None required.	--
Narrows Impact BIO-FPP-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities	NI	None required.	--
Chapter 11 - Recreation			
EXISTING CONDITION			
YRDP Impact REC-PP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated	LTS	None required	--
YRDP Impact REC-PP-2: Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment	LTS	None required.	--
Narrows Impact REC-PP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated	LTS	None required.	--
YRDP Cumulative Impact REC-PP-1: Potential for significant cumulative recreation impacts.	LTS	--	--
Narrows Cumulative Impact REC-PP-1: Potential for significant cumulative recreation impacts.	LTS	--	--
FUTURE BASELINE			
YRDP Impact REC-FPP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated	LTS	None required.	--
Narrows Impact REC-FPP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Chapter 12 - Visual Resources			
EXISTING CONDITION – AREAS UPSTREAM OF ENGLEBRIGHT DAM			
YRDP Impact VIS-PP-1: Construction-related impacts on a Scenic Vista	LTS	None required.	--
YRDP Impact VIS-PP-2: Operations-related Impacts on a Scenic Vista	LTS	None required.	--
YRDP Impact VIS-PP-3: Construction-related impacts on a Scenic Resource within a State Scenic Highway	NI	None required.	--
YRDP Impact VIS-PP-4: Operations-related Impacts on a Scenic Resource within a State Scenic Highway	NI	None required.	--
YRDP Impact VIS-PP-5: Construction-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings	LTS	None required.	--
YRDP Impact VIS-PP-6: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings	LTS	None required.	--
YRDP Impact VIS-PP-7: Introduction of a New Source of Substantial Light and Glare during Construction	S	**MM-VIS-1.** To reduce nighttime light and glare effects on sensitive receptors during construction, Yuba Water will ensure that the following measures are implemented as defined below: • All nighttime lighting will be shielded and directed downward and in the opposite direction from sensitive receptors. • Lighting shall be low intensity, where feasible, and located and designed to minimize direct view of light sources and diffusers, and to minimize halo and spillover effects.	LTSM
YRDP Impact VIS-PP-8: Introduction of a New Source of Substantial Light and Glare during Operations	LTS	None required.	--
YRDP Cumulative Impact VIS-PP-1: Potential for significant cumulative visual resource impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact VIS-PP-1: Potential for significant cumulative visual resource impacts resulting from the Narrows Project.	LTS	--	--
EXISTING CONDITION – LOWER YUBA RIVER			
YRDP Impact VIS-PP-9: Operations-related Impacts on a Scenic Vista	NI	None required.	--
YRDP Impact VIS-PP-10: Operations-related Impacts on a Scenic Resource within a State Scenic Highway	NI	None required.	--
YRDP Impact VIS-PP-11: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings	LTS	None required.	--
YRDP Impact VIS-PP-12: Introduction of a New Source of Substantial Light and Glare during Operations	NI	None required.	--
Narrows Impact VIS-PP-1: Operations-related Impacts on a Scenic Vista	NI	None required.	--
Narrows Impact VIS-PP-2: Operations-related Impacts on a Scenic Resource within a State Scenic Highway	NI	None required.	--
Narrows Impact VIS-PP-3: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings	NI	None required.	--
Narrows Impact VIS-PP-4: Introduction of a New Source of Substantial Light and Glare during Operations	NI	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Chapter 13 - Cultural Resources			
EXISTING CONDITION			
YRDP Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource	LTS	None required.	--
YRDP Impact CULT-PP-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource	LTS	None required.	--
YRDP Impact CULT-PP-3: Project Impacts That May Disturb any Human Remains	PS	**MM-CULT-1.** If human remains are uncovered during Project activities, Yuba Water shall immediately halt work, contact the appropriate County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c), and Public Resources Code 5097.98 (as amended). The NAHC shall designate a Most Likely Descendant (MLD) for the remains per Public Resources Code Section 5097.98, and Yuba Water shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further activity until Yuba Water has discussed and conferred with the MLD regarding their recommendation for the disposition of the remains, taking into account the possibility of multiple human remains , as prescribed in Public Resources Code Section 5097.98.	LTSM
Narrows Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource	NI	None required.	--
Narrows Impact CULT-PP-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource	NI	None required.	--
Narrows Impact CULT-PP-3: Project Impacts That May Disturb any Human Remains	PS	Mitigation Measure **MM-CULT-1**	LTSM
YRDP Cumulative Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains	LTS	--	--
Narrows Cumulative Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains	LTS	--	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Chapter 14 - Tribal Cultural Resources			
EXISTING CONDITION			
YRDP Impact TCR-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources	LTS	None required.	--
YRDP Cumulative Impact TCR-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources	LTS	--	--
Chapter 15 - Air Quality and Greenhouse Gas Emissions			
EXISTING CONDITION			
YRDP Impact AQ-PP-1: Conflicts with Applicable Air Quality Plan from Construction Activities	S	**MM-AQ-1:** Implement Best Management Practices to Reduce Emissions during Construction Standard conditions and best management practices from applicable state regulations or the local air district are listed below. • Haul trucks would be compliant with CARB's Truck and Bus Regulation, which mandates that nearly all trucks will be required to have 2010 or newer model year engines to reduce particulate matter and oxides of nitrogen emissions. • In accordance with the In-Use Off-Road Diesel Fueled Fleet Regulation, renewable diesel is required to be used. • A dust control plan would be required per NSAQMD Rule 226 Dust Control. This would be required by the air district and not considered a mitigation. The construction emissions calculated incorporate twice daily watering, which is a standard condition of dust control plans and would achieve a default PM10 and PM2.5 reduction of 61 percent. Other standard dust controls include limiting speeds to 15 mph on unpaved roads, suspending construction when winds exceed 20 mph, street sweeping/washing, seeding, and maintaining a minimum 6 inches of freeboard in the bed of a transport vehicle (NSAQMD 2024). • The FRAQMD recommends standard mitigation measures (for projects that do not exceed the construction thresholds of significance) and best available mitigation measures (for projects that do exceed the construction thresholds of significance) for construction as described below (FRAQMD 2024). Both standard and best available mitigation measures would be required. <u>Standard mitigation measures:</u> 1. Implement the Fugitive Dust Control Plan 2. Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0).	LTSM

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
		3. The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of onsite operation. 4. Limiting idling time to 5 minutes – saves fuel and reduces emissions. (State idling rule: commercial diesel vehicles-13 CCR Chapter 10 § 2485 effective 02/01/2005; off road diesel vehicles- 13 CCR Chapter 9 Article 4.8 § 2449 effective 05/01/2008) 5. Utilize existing power sources (e.g. power poles) or clean fuel generators rather than temporary power generators. 6. Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites. 7. Portable engines and portable engine-driven equipment units used at the Project work site, with the exception of on-road and off-road motor vehicles, may require California Air Resources Board Portable Equipment Registration with the State or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with the ARB or the District to determine registration and permitting requirements prior to equipment operation at the site. <u>Best available mitigation measures</u> 1. All grading operations on a Project should be suspended when winds exceed 20 mph or when winds carry dust beyond the property line despite implementation of all feasible dust control measures. 2. Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations. 3. An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and offsite dust impacts. 4. Onsite dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind blown dust emissions. Incorporate the use of approved non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas.	

		5. All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions. 6. Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all-inactive construction areas (previously graded areas that remain inactive for 96 hours) including unpaved roads and employee/equipment parking areas. 7. To prevent track-out, wheel washers should be installed where Project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out. 8. Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the Project site. 9. Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or Caltrans and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph. 10. Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, onsite enforcement, and signage. 11. Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering. 12. Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the Project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et. al.) may be conducted at the Project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning. **MM-AQ-2:** Implementation of Emission Reducing Equipment and Develop Equipment and Vehicle Inventory Yuba Water will require contractors to include the use of Tier 4 final or other emission reducing equipment, where feasible, into engineering plans and bid documents. Yuba Water will require its contractor to prepare a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty (equal to or greater than 50 horsepower) off-road (portable and mobile) equipment that will be	

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
		used an aggregate of 40 or more hours for the construction Project including owned, leased, and subcontractor vehicles). The contractor will calculate the emissions as compared to FRAQMD and NSAQMD thresholds of significance for air quality and submit their findings to the appropriate air district prior to commencing construction. Estimated emissions will be shown to be below the thresholds for ROG, NOx, and PM or will need re-evaluation and coordination with the appropriate air district to achieve compliance with the thresholds. The Project will provide a monthly summary of heavy-duty off-road equipment usage to FRAQMD and NSAQMD, as appropriate, throughout Project construction. A final summary at the end of construction for each major construction activity will be submitted to FRAQMD and NSAQMD, as appropriate, within 60 days of completion. Data to be collected includes construction equipment (number of pieces of each equipment type, model year, engine horsepower and tier, hours of operation for each type), haul trucks (number of heavy-duty haul truck trips, on-road and off-road distance for haul truck trips), number of construction workers per day, and total volume of cut/fill.	
YRDP Impact AQ-PP-2: Conflicts with Applicable Air Quality Plan from Operations	SU	None feasible.	--
YRDP Impact AQ-PP-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction Activities	S	Mitigation Measures **MM-AQ-1** and **MM-AQ-2**.	LTSM
YRDP Impact AQ-PP-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations	SU	None feasible.	--
YRDP Impact AQ-PP-5: Expose sensitive receptors to substantial pollutant concentrations	LTS	None required.	--
YRDP Impact AQ-PP-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people	S	Mitigation Measures **MM-AQ-1** and **MM-AQ-2**.	LTSM
YRDP Impact GHG-PP-1: Generation of GHG Emissions from Construction Activities	S	Mitigation Measures **MM-AQ-1** and **MM-AQ-2**.	SU
YRDP Impact GHG-PP-2: Generation of GHG Emissions from Operations	SU	None feasible.	--
YRDP Impact GHG-PP-3: Conflict with a GHG Reduction Plan	SU	None feasible.	--
Narrows Impact AQ-PP-1 Conflicts with Applicable Air Quality Plan from Construction	NI	None required.	--
Narrows Impact AQ-PP-2: Conflicts with Applicable Air Quality Plan from Operations	LTS	None required.	--
Narrows Impact AQ-PP-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction	NI	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Narrows Impact AQ-PP-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations	LTS	None required.	--
Narrows Impact AQ-PP-5: Expose sensitive receptors to substantial pollutant concentrations	LTS	None required.	--
Narrows Impact AQ-PP-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people	LTS	None required.	
Narrows Impact GHG-PP-1: Generation of GHG Emissions from Operations	LTS	None required.	--
Narrows Impact GHG-PP-2: Conflict with a GHG Reduction Plan	LTS	None required.	--
YRDP Cumulative Impact AQ-PP-1: Potential for significant cumulative air quality impact resulting from the YRDP.	SU	--	--
YRDP Cumulative Impact GHG-PP-1: Potential for significant cumulative GHG impact resulting from the YRDP.	SU	--	--
Narrows Cumulative Impact AQ-PP-1: Potential for significant cumulative air quality impact resulting from the Narrows Project.	LTS	--	--
Narrows Cumulative Impact GHG-PP-1: Potential for significant cumulative GHG impact resulting from the Narrows Project.	LTS	--	--
Chapter 16 - Geology and Soils			
EXISTING CONDITION – AREAS UPSTREAM OF ENGLEBRIGHT DAM			
YRDP Impact GEO-PP-1: Construction of proposed YDRP facilities, or operations of existing YDRP facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.	LTS	None required.	--
YRDP Impact GEO-PP-2: Construction of proposed YDRP facilities, or operations of existing YDRP facilities, that could result in substantial erosion or the loss of topsoil.	LTS	None required.	--
YDRP Impact GEO-PP-3: Construction of proposed YDRP facilities, or operations of existing YDRP facilities, that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	LTS	None required.	--
YDRP Impact GEO-PP-4: Construction of proposed YRDP facilities, or operations of existing YDRP facilities, that are located on expansive soils, creating substantial direct or indirect risk to life or property.	LTS	None required.	--
YDRP Impact GEO-PP-5: Construction of proposed YDRP facilities, or operations of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	LTS	None required.	--
YRDP Impact GEO-PP-6: Construction of proposed YDRP facilities, or operations of existing facilities, that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
EXISTING CONDITION – LOWER YUBA RIVER			
Narrows Impact GEO-PP-1: Operations of existing Narrows Project facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.	LTS	None required.	--
Narrows Impact GEO-PP-2: Operations of existing Narrows Project facilities that could result in substantial erosion or the loss of topsoil.	LTS	None required.	--
Narrows Impact GEO-PP-3: Operations of existing Narrows Project facilities that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	LTS	None required.	--
Narrows Impact GEO-PP-4: Operations of existing Narrows Project facilities that are located on expansive soils, creating substantial direct or indirect risk to life or property	LTS	None required.	--
Narrows Impact GEO-PP-5: Operations of existing Narrows Project facilities where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	NI	None required.	--
Narrows Impact GEO-PP-6: Operations of existing Narrows Project facilities that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	NI	None required.	--
YRDP Cumulative Impact GEO-PP-1: Potential for significant cumulative geology and soils impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact GEO-PP-1: Potential for significant cumulative geology and soils impacts resulting from the operations of Narrows Project facilities.	LTS	--	--
Chapter 17 - Hazards and Hazardous Materials			
EXISTING CONDITION			
YRDP Impact HAZ-PP-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LTS	None required.	--
YRDP Impact HAZ-PP-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LTS	None required.	--
YRDP Impact HAZ-PP-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	LTS	None required.	--
Narrows Impact HAZ-PP-1: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
environment through the routine transport, use, or disposal of hazardous materials.			
Narrows Impact HAZ-PP-2: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	LTS	None required.	--
Narrows Impact HAZ-PP-3: Operations of existing Narrows Project facilities that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	NI	None required.	--
YRDP Cumulative Impact HAZ-PP-1: Potential for significant cumulative hazards and hazardous materials impacts resulting from the construction or operation of YRDP facilities.	LTS	--	--
Narrows Cumulative Impact HAZ-PP-2: Potential for significant hazards and hazardous materials impacts resulting from the operations of Narrows facilities.	LTS	--	--
Chapter 18 - Wildfire			
EXISTING CONDITION			
YRDP Impact WF-PP-1: Construction Impacts on Emergency Response Plans or Emergency Evacuation Plans	LTS	None required.	--
YRDP Impact WF-PP-2: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans	PS	**MM-WF-1.** Yuba Water, in coordination with the Yuba County Office of Emergency Services and the Yuba Watershed and Fire Safe Council, shall prepare a plan to be implemented in the event that visitors to Yuba Water recreation facilities and Yuba Water employees and contractors cannot be safely evacuated from a wildfire that spreads to the Project Area and vicinity. This plan may include, but is not limited to, shelter-in-place procedures and designation of temporary refuge areas, which may include but are not limited to parking lots and outdoor gathering areas. This plan is to be implemented as a last resort and in no way shall be interpreted as to allow Yuba Water visitors, employees, and contractors to ignore evacuation notices, whether advisory or mandatory.	LTSM
YRDP Impact WF-PP-3: Construction Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire	LTS	None required.	--
YRDP Impact WF-PP-4: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire	LTS	None required.	--
YRDP Impact WF-PP-5: Construction Impacts Related to Installation or Maintenance of Associated Infrastructure	LTS	None required.	--
YRDP Impact WF-PP-6: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure	LTS	None required.	--
YRDP Impact WF-PP-7: Construction Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
YRDP Impact WF-PP-8: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.	LTS	None required.	--
YRDP Impact WF-PP-9: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.	PS	Mitigation Measure **MM-WF-1.**	LTSM
Narrows Impact WF-PP-1: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans	LTS	None required.	--
Narrows Impact WF-PP-2: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire	LTS	None required.	--
Narrows Impact WF-PP-3: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure	LTS	None required.	--
Narrows Impact WF-PP-4: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.	LTS	None required.	--
Narrows Impact WF-PP-5: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.	LTS	None required.	--
YRDP Cumulative Impact WF-PP-1: Potential for significant cumulative wildfire impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact WF-PP-1: Potential for significant cumulative wildfire impacts resulting from the Narrows Project.	LTS	--	--
Chapter 19 - Transportation			
EXISTING CONDITION			
YRDP Impact TRANS-PP-1: Construction Impacts on Transportation Plans	LTS	None required.	--
YRDP Impact TRANS-PP-2: Operational Impacts on Transportation Plans	LTS	None required.	--
YRDP Impact TRANS-PP-3: Construction Impacts on Consistency with CEQA Guidelines §15064.3.	SU	None feasible.	--
YRDP Impact TRANS-PP-4: Operational Impacts on Consistency with CEQA Guidelines §15064.3.	SU	None feasible.	--
YRDP Impact TRANS-PP-5: Construction Impacts on Hazards and Emergency Access	LTS	None required.	--
YRDP Impact TRANS-PP-6: Operational Impacts on Hazards and Emergency Access	LTS	None required.	--
Narrows Impact TRANS-PP-1: Operational Impacts on Transportation Plan	NI	None required.	--
Narrows Impact TRANS-PP-2: Operational Impacts on Consistency with CEQA Guidelines §15064.3.	NI	None required.	--
Narrows Impact TRANS-PP-3: Operational Impacts on Hazards and Emergency Access	NI	None required.	--
YRDP Cumulative Impact TRANS-PP-1: Potential for significant cumulative transportation impacts resulting from the YRDP.	SU	--	--
Narrows Cumulative Impact TRANS-PP-1: Potential for significant cumulative transportation resulting from the Narrows Project.	NI	--	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Chapter 20 - Noise			
EXISTING CONDITION – AREAS UPSTREAM OF ENGLEBRIGHT DAM			
YRDP Impact NOISE-PP-1: Construction Impacts on Ambient Noise	S	**MM-NOISE-1.** Yuba Water will require its primary contractor(s) for engineering design and construction to implement the following measures to avoid and minimize construction noise effects on sensitive receptors. Measures that will be used to limit noise will include, but not be limited to, the measures listed below. • No construction will be performed within 1,000 feet of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 10:00 p.m. and 7:00 a.m. on other days without the approval of the Yuba Water construction project manager. • All equipment used will have sound-control devices no less effective than those provided on the original equipment. No equipment will have unmuffled exhaust. All equipment will comply with pertinent equipment EPA noise standards. • All construction activities shall not exceed the maximum noise standards set forth in the Yuba County General Plan for non-transportation noise sources at noise-sensitive land uses, as required by Yuba County Code § 11.26.050. This shall also include any recreation facilities open in the area during any construction work in the open season (April 15 – October 15), The contractor shall implement any noise-reduction measures to achieve the Yuba County General Plan standards, including but not limited to noise barriers and use of electric equipment. These measures shall be incorporated within final construction specifications. These measures need not be applied during the time the recreation facilities are regularly closed, or if the contractor can demonstrate that non-recreation noise-sensitive land uses would not be exposed to noise levels exceeding Yuba County General Plan standards. • Construction and haul routes will be planned to minimize construction and traffic during nighttime hours, and route haul traffic away from residential receptors to the extent feasible and practicable. • A disturbance coordinator will be designated. The disturbance coordinator's phone number will be conspicuously posted around the construction site, in adjacent public spaces, and in construction notifications. The disturbance coordinator will be responsible for responding to any complaints about construction activities. The disturbance coordinator will receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implement any feasible measures to alleviate the complaint.	LTSM

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
		The disturbance coordinator will have the authority to halt noise-generating activity, if necessary and feasible, to protect public health. **MM-NOISE-2.** The following measures will be implemented to notify nearby residences and recreationists of construction work activities: • Signage will be posted at the Emerald Cove Marina and nearby recreation areas such as the Yuba Rim Trail, New Bullards Bar Trail, Cottage Creek boat launch, and the Dark Day boat launch notifying people that excessive noise generation from construction activities will occur at times. • Prior to implementing any nighttime (10:00 p.m. – 7:00 a.m.) construction work that is approved by the Yuba Water construction project manager per Mitigation Measure MM-NOISE-1, residences within a 0.75-mile radius of the construction site will be notified in writing (email or letter) at least 48 hours in advance of any potential or planned nighttime construction work with the estimated schedule (dates) for such nighttime work. In addition, the same notification of potential nighttime construction work will be posted at the Emerald Cove Marina.	
YRDP Impact NOISE-PP-2: Operational Impacts on Ambient Noise	LTS	None required.	--
YRDP Impact NOISE-PP-3: Construction Impacts on Groundborne Vibration	LTS	None required.	--
YRDP Impact NOISE-PP-4: Operational Impacts on Groundborne Vibration	LTS	None required.	--
Narrows Impact NOISE-PP-1: Operational Impacts on Ambient Noise	NI	None required.	--
Narrows Impact NOISE-PP-2: Operational Impacts on Groundborne Vibration	NI	None required.	--
YRDP Cumulative Impact NOISE-PP-1: Potential for significant cumulative noise and vibration impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact NOISE-PP-1: Potential for significant cumulative noise and vibration impacts resulting from the Narrows Project.	NI	--	--
Chapter 21- Agriculture and Forestry Resources			
EXISTING CONDITION			
YRDP Impact AG-PP-1: Construction Impacts on Conversion of Farmland	NI	None required.	--
YRDP Impact AG-PP-2: Operational Impacts on Conversion of Farmland	NI	None required.	--
YRDP Impact AG-PP-3: Construction Impacts on Agricultural Zoning and Williamson Act Lands	NI	None required.	--
YRDP Impact AG-PP-4: Operational Impacts on Agricultural Zoning and Williamson Act Lands	NI	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
YRDP Impact AG-PP-5: Construction Impacts on Zoning of Forest Land	LTS	None required.	--
YRDP Impact AG-PP-6: Operational Impacts on Zoning of Forest Land	LTS	None required.	--
YRDP Impact AG-PP-7: Construction Impacts on Loss or Conversion of Forest Land	LTS	None required.	--
YRDP Impact AG-PP-8: Operational Impacts on Loss or Conversion of Forest Land	LTS	None required.	--
YRDP Impact AG-PP-9: Construction Impacts on Resulting in Other Changes Leading to Conversion of Farmland or Forest Land	LTS	None required.	--
YRDP Impact AG-PP-10: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land	LTS	None required.	--
Narrows Impact AG-PP-1: Operational Impacts on Conversion of Farmland	NI	None required.	--
Narrows Impact AG-PP-2: Operational Impacts on Agricultural Zoning and Williamson Act Lands	LTS	None required.	--
Narrows Impact AG-PP-3: Operational Impacts on Zoning of Forest Land	LTS	None required.	--
Narrows Impact AG-PP-4: Operational Impacts on Loss or Conversion of Forest Land	LTS	None required.	--
Narrows Impact AG-PP-5: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land	LTS	None required.	--
YRDP Cumulative Impact AG-PP-1: Cumulative Impacts on Agricultural and Forestry Resources	LTS	--	--
Narrows Cumulative Impact AG-PP-1: Cumulative Impacts on Agricultural and Forestry Resources	LTS	--	--
Chapter 22 - Land Use and Planning			
EXISTING CONDITION			
YRDP Impact LUP-PP-1: Construction Impacts on Land Use and Planning	LTS	None required.	--
YRDP Impact LUP-PP-2: Operational Impacts on Land Use and Planning	LTS	None required.	--
Narrows Impact LUP-PP-1: Operational Impacts on Land Use and Planning	LTS	None required.	--
YRDP Cumulative Impact LUP-PP-1: Potential for significant cumulative land use and planning impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact LUP-PP-1: Potential for significant cumulative land use and planning impacts resulting from the Narrows Project.	LTS	--	--
Chapter 23 - Public Services			
EXISTING CONDITION			
YRDP Impact PS-PP-1: Construction Impacts on Fire Protection Services	NI	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
YRDP Impact PS-PP-2: Operational Impacts on Fire Protection Services	LTS	None required.	--
YRDP Impact PS-PP-3: Construction Impacts on Police Protection Services	NI	None required.	--
YRDP Impact PS-PP-4: Operational Impacts on Police Protection Services	NI	None required.	--
Narrows Impact PS-PP-1: Operational Impacts on Fire Protection Services	NI	None required.	--
Narrows Impact PS-PP-2: Operational Impacts on Police Protection Services	NI	None required.	--
YRDP Cumulative Impact PS-PP-1: Potential for significant cumulative public services impacts resulting from the YRDP.	LTS	--	--
Narrows Cumulative Impact PS-PP-1: Potential for significant cumulative public service impacts resulting from the Narrows Project.	NI	--	--
Chapter 24 - Utilities and Service Systems			
EXISTING CONDITION			
YRDP Impact UTIL-PP-1: Relocation or Construction of New or Expanded Infrastructure	PS	**MM UTIL-1.** Prior to start of construction, Yuba Water will implement the following measures to avoid and minimize potential damage to utilities and infrastructure: • Coordinate with applicable utility and service providers to implement orderly relocation of utilities that need to be removed or relocated. • Provide notification of any potential interruptions in service to the appropriate agencies and affected landowners. • Verify through field surveys and Underground Service Alert service the locations of buried utilities on the construction site, including but not limited to electrical and water lines. Any buried utility lines will be clearly marked in the construction area (e.g., in the field) and on the construction specifications in advance of any earthmoving activities. • Prepare and implement a response plan that addresses potential accidental damage to a utility line. The plan will identify chain-of-command rules for notification of authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan will include worker training on responses to accidental damage. • Stage utility relocations prior to and during construction to minimize interruptions in service. • Coordinate with PG&E to relocate electrical and other transmission lines and associated infrastructure such as power poles.	LTSM
YRDP Impact UTIL-PP-2: Construction Impacts on Water Supplies	LTS	None required.	--
YRDP Impact UTIL-PP-3: Operations Impacts on Water Supplies	LTS	None required.	--

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
YRDP Impact UTIL-PP-4: Operations Impacts on Wastewater Treatment	LTS	None required.	--
YRDP Impact UTIL-PP-5: Construction Impacts on Solid Waste and Compliance with Solid Waste Regulations	LTS	None required	--
YRDP Impact UTIL-PP-6: Operations Impacts on Solid Waste and Compliance with Solid Waste Regulations	LTS	None required.	--
Narrows Impact UTIL-PP-1: Operations Impacts on Utilities and Service Systems	NI	None required.	--
Narrows Impact UTIL-PP-2: Operations Impacts on Solid Waste	NI	None required.	--
YRDP Cumulative Impact UTIL-PP-1: Potential for significant cumulative utilities impacts resulting from the YRDP	LTS	--	--
Narrows Cumulative Impact UTIL-PP-1: Potential for significant cumulative utilities impacts resulting from the Narrows Project	NI	--	--

Source: HDR 2025.
Notes:
S – Significant
PS – Potentially Significant
SU – Significant and Unavoidable
LTS – Less Than Significant
LTSM – Less Than Significant with Mitigation Incorporated
NI – No Impact
B – Beneficial
PB – Potentially Beneficial

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CHAPTER 1

INTRODUCTION

The Yuba County Water Agency (Yuba Water) was established by State legislation in 1959 to reduce flood risk and to provide a sustainable water supply for the people of Yuba County. Yuba Water owns and operates the Yuba River Development Project (YRDP) and the Narrows Hydroelectric Project (Narrows Project), both of which are hydroelectric projects that operate separately pursuant to individual licenses issued by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act (FPA). Yuba Water is seeking renewal of its two FERC licenses to continue operation and maintenance (O&M) of both projects. Yuba Water is the lead agency under the California Environmental Quality Act (CEQA) for environmental consideration of acceptance of the FERC license renewals for both projects. Yuba Water has elected to prepare a joint environmental impact report (EIR) for the YRDP and the Narrows Project relicensings. This Draft EIR (DEIR) evaluates the potential environmental impacts of the proposed renewals of the FERC licenses for the YRDP and the Narrows Project, respectively.

The YRDP (FERC Project No. 2246) currently operates under a 50-year license that was originally issued on May 16, 1963 by the Federal Power Commission, predecessor of FERC, for the period from May 1, 1963 through April 30, 2013. The Federal Power Commission's May 6, 1966, Order Amending License changed the license's effective date to May 1, 1966, for a term ending on April 30, 2016. Since the existing license expired in 2016, FERC has issued Yuba Water an automatically renewing annual license that allows operation of the YRDP under the existing license until FERC issues the new license with updated terms and conditions. On April 28, 2014, Yuba Water filed an application for a new 50-year license with FERC to continue to operate and maintain the YRDP.[1] On June 5, 2017, Yuba Water filed an amended license application (errata filed July 21, September 15, and November 1, 2017) for the YRDP.[2] Yuba Water has requested a new 50-year license for the YRDP because Yuba Water anticipates incurring substantial expenses during the remainder of the existing license and under the new license term for modifications to its generation facility, the addition of a flood control outlet, and implementing protection, mitigation, and enhancement (PM&E) measures, including constructing and refurbishing recreation facilities and access roads thereto.

Similarly, the Federal Power Commission issued an original license for the Narrows Project (FERC Project No. 1403) to the Pacific Gas and Electric Company (PG&E) on August 1, 1941,[3] and FERC issued a new project license to PG&E on February 11, 1993, for the period from February 1, 1993 through January 31, 2023. On January 26, 2018, FERC approved PG&E's request to extend the license term to January 31, 2026. On May 2, 2019, FERC approved the transfer of the license from PG&E to Yuba Water. On November 14, 2023, Yuba Water filed an application for a new license with FERC to continue to operate and maintain the Narrows Project. Yuba Water has requested a new license term of 50 years for the Narrows Project that would end concurrently with the term of the new license that FERC issues for the YRDP. Although Yuba Water is not proposing changes to the Narrows Project that would ordinarily justify a new 50-year

[1] Available in FERC's eLibrary at Accession No. 20140428-5072 (Filed on April 28, 2014).
[2] Available in FERC's eLibrary at Accession No. 20170605-5050 (Filed on June 5, 2017).
[3] 62 FERC ¶ 62,093 (1993). FERC's predecessor, the Federal Power Commission, issued an original license for the Narrows Project in 1941. 2 F.P.C. 892 (1941).

license term, it is in the public interest, and consistent with FERC's 2017 Policy Statement (82 FR 49501) on establishing license terms to coordinate license terms for projects located in the same river basin. As described in this DEIR, the Narrows Project and the YRDP's Narrows 2 Development are co-located at the U.S. Army Corps of Engineers (USACE) Englebright Dam and have coordinated operations. Accordingly, Yuba Water determined that it would be most appropriate to address the environmental impacts of relicensing both the YRDP and the Narrows Project in the same CEQA document.

1.1 Type and Purpose of this CEQA Document

Pursuant to the National Environmental Policy Act (NEPA) of 1969, FERC must consider the environmental impacts of proposed major Federal actions as part of its decision-making process, including issuance of new FERC licenses to Yuba Water for continued O&M of the YRDP and the Narrows Project. In 2019, FERC, along with the USACE as a cooperating agency, issued a Final Environmental Impact (FEIS) Statement for Hydropower License, YRDP, Project No. 2246-065 – California in accordance with NEPA and FERC regulations (Title 18 Code of Federal Regulations Part 380). The FERC and USACE (2019) FEIS[4] included detailed environmental analyses of the YRDP, including licensee-proposed PM&E measures recommended for inclusion in the new license for continued operation of the YRDP. Subsequently, FERC sent Yuba Water an Additional Information Request (AIR)[5] on March 8, 2021 to further inform FERC staff's analysis in a forthcoming supplemental EIS (SEIS) for the YRDP (FERC 2021). To date, FERC has not issued a NEPA environmental compliance document for the Narrows Project. However, as a step forward, FERC issued a "*Notice of Application Ready for Environmental Analysis* [REA] *and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions*" for the Narrows Project on February 26, 2025, which included a 60-day comment period scheduled to end on April 28, 2025.

Similarly, CEQA (Pub. Res. Code §§21000-21189.3) requires state and local government agencies to follow specified procedures to identify any significant environmental impacts of their proposed actions and to avoid or mitigate those impacts whenever feasible. CEQA applies to all discretionary activities proposed to be undertaken or approved by California state agencies, such as the State Water Resources Control Board (SWRCB) and the California Department of Fish and Wildlife (CDFW), or local government agencies such as Yuba Water. Compliance with CEQA is necessary to inform the future discretionary action of Yuba Water's Board of Directors to accept the new FERC licenses issued by FERC. Issuance of the new licenses by FERC would allow Yuba Water to continue to generate electricity at the 361.9-megawatt (MW) capacity YRDP and at the 12-MW capacity Narrows Project for the term of the new licenses (default license terms are for 40 years, but FERC may issue the license for up to 50 years).

Yuba Water previously issued a Notice of Intent (NOI) to rely on the 2019 FERC FEIS, in combination with a Supplemental Analysis, to satisfy CEQA for the YRDP Relicensing (State Clearinghouse Number 2022110118) and held CEQA public scoping meetings during the NOI

[4] As described above, it is recognized that the 2019 FEIS for the YRDP was prepared by both FERC and the USACE (as a cooperating agency under NEPA). For ease of use throughout this document, the 2019 FEIS is generally referred to as "FERC (2019)" or "FERC's FEIS" from this point forward in this document because: (1) the most substantive decision-making will be made by FERC; and (2) FERC was the lead author of the FEIS.

[5] Available in FERC's eLibrary at Accession No. 20210308-3037 (Filed on March 8, 2021).

public comment period. FERC informed Yuba Water of its plans to prepare a SEIS and a revised biological assessment (BA) (see additional discussion below under Section 1.2.1). FERC explained that the SEIS will address new information in the administrative record and may revise FERC staff's preferred project alternative. To date, FERC has not yet issued the SEIS for the YRDP or a NEPA environmental compliance document for the Narrows Project, and the timing of these pending federal actions is unknown. As a result, Yuba Water no longer intends to rely on the FEIS and a Supplemental Analysis for CEQA compliance for the YRDP Relicensing.

Because FERC is preparing a supplement to the 2019 FEIS for the YRDP and has not yet issued a NEPA environmental compliance document for the Narrows Project, Yuba Water has elected to prepare a new, standalone EIR for both the YRDP and the Narrows Project relicensings to comply with CEQA. This DEIR evaluates the potential environmental impacts of the proposed renewal of Yuba Water's FERC licenses for both the YRDP and the Narrows Project.

As the local governmental agency with the authority to accept the new FERC licenses, Yuba Water is the lead agency for the CEQA process for the YRDP and Narrows Project relicensings and expects that the SWRCB will be a CEQA responsible agency. Yuba Water also expects that CDFW will be involved in the CEQA process because it is both a trustee agency for the state's fish and wildlife resources and a responsible agency for administering the California Endangered Species Act (CESA) and other provisions of the California Fish and Game Code that afford protection to the state's fish and wildlife public resources (CEQA Guidelines § 21070 and 21069).

This DEIR has been prepared in accordance with CEQA (Public Resources Code, § 21000 et seq.) and the CEQA Guidelines (Cal. Code Regs. Title 14, § 15000 et seq.), consistent with Public Resources Code Section 21083.5 and Cal. Code Regs. Title 14, § 15221.

1.2 Project Background and History

1.2.1 Yuba Water's Mission and its Relationship to the YRDP

Yuba Water is seeking renewal of its FERC license for the YRDP to continue to provide a source of hydroelectric power, in addition to providing flood control and serving as a water supply for both domestic and irrigation purposes. Project benefits include water supply, flood control, recreation, fish and wildlife habitat, and power generation (YCWA 2010).

The project purpose and objectives (see Chapter 2) depend on the broader purposes of Yuba Water and, therefore, the YRDP. In 1955, a devastating flood on the Feather River killed 38 people, left more than 4,000 injured and forced the evacuation of 40,000 residents from their homes. The cost of the damage was reported to amount to $100 million, equivalent to $3.4 billion in 2024 (Villarreal 2024; YCWA 2024a). In addition, due to the presence of the 15,000 acres of hydraulic mining debris located immediately south of the Yuba River in the Yuba Goldfields, farmers in south Yuba County were unable to access water from the Yuba River, and the resulting groundwater pumping created a long-term overdraft in the area (YCWA 2019).

In 1959, the Legislature created Yuba Water by enacting the Yuba County Water Agency Act. (Cal. Stats. 1959, ch. 788, §§ 1-28, pp. 2780-2798.) The Legislature found that the special creation of Yuba Water was necessary as follows:

> The Legislature hereby finds that water problems in the County of Yuba require countywide water conservation, flood control and development of water resources; that all land within the county will be benefited thereby; that the solution of these problems lies within and is peculiar to the area to be included in the Yuba County Water Agency; that the county for many years has made investigations and engineering surveys of the county's water resources by private, public and United States engineers; that county water districts, municipalities, irrigation districts and reclamation districts now exist within portions of the county, have acquired property and works, developed a limited water supply, and have incurred indebtedness, but have been and are unable alone to economically develop an adequate water supply and control the floods of said county, and for such reason it is necessary to have a political entity at least coextensive with the geographical limits of the entire county. It is therefore hereby declared that a general law cannot be made applicable to said county, and that the enactment of this special law is necessary for the conservation, development, control and use of said water for the public good and for the protection of life and property therein (Cal. Stats., ch. 788, § 26, p. 2798.).

The Legislature authorized Yuba Water "*to do any and every lawful act necessary in order that sufficient water may be available for any present or future beneficial use or uses of the lands or inhabitants within the agency*." (Cal. Stats. 1959, ch. 788, § 4, p. 2783.) More specifically, and recognizing that hydroelectric generation was likely to be a significant source of revenue for Yuba Water, the Legislature authorized Yuba Water to develop hydroelectric generation, enter into related contracts for terms not to exceed 50 years, and "*to pledge the revenue therefrom for the payment of principal and interest on revenue bonds*." (Cal. Stats. 1959, ch. 788, § 4.1, p. 2783; see also Cal. Stats. 1959, ch. 788, §§ 4.7, 4.11, pp. 2784-2785 (authorizing Yuba Water to take other acts concerning hydroelectric power)).

Events following the Legislature's creation of Yuba Water have demonstrated the critical importance of the YRDP's operations to Yuba County's people. In 1964, before Yuba Water was able to build the YRDP, another deadly flood struck Yuba County (USGS 2014). In 1969, however, Yuba Water was able to operate the partially constructed YRDP to reduce Yuba River flood flows (Perini News 1969). In the mid-1980s, Yuba Water began providing Yuba River water made available by the YRDP to farms in south Yuba County and the groundwater in that area has recovered to levels that are sustainable for the long term (YCWA 2019).

As anticipated by the Legislature's authorization of Yuba Water to not only generate hydroelectric power, but also to rely on the resulting revenues to finance the YRDP generally, those revenues have been, and remain, critical for Yuba Water in implementing its statutory missions as assigned by the Legislature. Under Yuba Water's current FERC license, it contracted with PG&E to sell all the electricity that the YRDP generated to PG&E, with PG&E's payments to Yuba Water then providing the revenues necessary for Yuba Water to repay the bonds that financed the YRDP's

construction. Revenue generated by sales of the YRDP's electrical generation are critical for Yuba Water to implement its statutory missions.

Because Yuba Water no longer operates the YRDP under an agreement with PG&E, Yuba Water will be solely responsible under the new license for costs associated with YRDP's ongoing operations and any capital improvements necessary to achieve Yuba Water's flood-control and water-supply missions. For example, Yuba Water has proposed to construct and operate an Atmospheric River Control (ARC) Spillway at the YRDP's New Bullards Bar Dam in order to improve downstream flood control (YCWA 2023b). The ARC Spillway's estimated cost (2023 dollars) is about $210,570,000 million (YCWA 2023c). To the extent that federal and state funds are not available to support the ARC Spillway's construction, Yuba Water will need to fund the construction of the ARC Spillway, and revenues from the YRDP's hydroelectric generation would be the primary source of such funding. Similarly, Yuba Water will rely on revenue from YRDP sales to maintain the YRDP facilities over the term of the new license and beyond. This will be a very significant financial obligation for Yuba Water. For example, the YRDP's New Bullards Bar Dam is now 55 years old and is a 675-foot-high concrete arch dam. Its maintenance will be critical to sustain the flood-control and water-supply benefits it provides to Yuba County and to ensure its indefinite structural integrity.

Revenue from the YRDP also enables Yuba Water to make substantial water-related investments to support Yuba County's disadvantaged communities (DACs). Yuba County is one of the most economically disadvantaged counties in California, with the majority of its population living in DACs as identified by the State of California (SCDD 2024). Since 2016, when the power purchase agreement between PG&E and Yuba Water ended, Yuba Water has been able to make over $92.9 million in substantial investments in water-related programs and improvements throughout Yuba County to improve conditions in the County's DACs. Given Yuba County's general economic condition, Yuba Water is the only source of local funding for such programs and improvements. For example, Yuba Water is the only available source of funds to make the local match that is often required for federal and state grants for water-related projects. Since 2016, Yuba Water has provided grant funding to support various initiatives, including the agency's core mission areas of flood risk reduction ($66.4 million) and water supply management ($14.9 million), as well as forest health and water resilience ($6.5 million).

The continuation of revenues from the YRDP's hydroelectric generation under a new license also will be critical for Yuba Water to continue to fund significant environmental projects that will continue Yuba Water's efforts to address the long-term damage to conditions for sensitive fish—including Chinook salmon, steelhead and green sturgeon—in the lower Yuba River caused by hydraulic mining and facilities owned by others. Hydraulic mining in the 1800s obliterated the Yuba River's original channel by releasing an amount of earth and other debris that was more than three times the amount of earth excavated to build the Panama Canal (Gilbert 1917) as cited in Yoshiyama et al. (2001). In an effort to control this debris, the federal government built several facilities in the lower Yuba River that, among other things, still block or impede migration of salmonids and other fish through the lower Yuba River. It is well-documented that, before Yuba Water constructed and began operating the YRDP in the late 1960s, conditions in the lower Yuba River were extremely detrimental for fish (Wooster 1963; Wooster & Wickwire 1970). For example, in 1960, CDFW built a barrier across the mouth of the lower Yuba River to prevent salmon from migrating upstream into the river until later in the year, when more stable streamflows

would be available (Wooster & Wickwire 1970). It also is well-documented that the YRDP's operations significantly improve conditions for fish in the lower Yuba River by providing more stable, and much cooler, streamflows during the summer and fall, relative to conditions that existed, and would exist, without the YRDP (YCWA 2017a; YCWA 2017b; YCWA et al 2007).

To maximize the value of these YRDP benefits, Yuba Water has used its hydroelectric revenues, in combination with other funds, to improve physical habitat and fish passage in the lower Yuba River. For example, Yuba Water spent $3 million of its revenues to support construction of the Hallwood Side Channel and Floodplain Restoration Project[6] (Hydro Review 2023). That project was completed in 2023 (YCWA 2024a). Similarly, under a memorandum of understanding with CDFW and the National Marine Fisheries Service (NMFS) signed at a May 2023 event involving Governor Gavin Newsom, Yuba Water is working to design, construct and operate a Nature-Like Fishway that would enable volitional passage of Chinook salmon, steelhead, green sturgeon and other fish around USACE's Daguerre Point Dam on the lower Yuba River (YCWA 2023d). On February 18, 2025, Yuba Water's Board of Directors adopted Resolution No. 2025-05 finding that the Daguerre Point NLF Project is within the scope of the Statewide Restoration General Order Program EIR (SWRCB 2022), approved the NLF project and authorized execution of the Yuba River Resilience Initiative Agreement. Yuba Water anticipates that its share of this project's cost will be at least $30 million and anticipates using its hydroelectric revenues to support this commitment.

In addition to supporting Yuba Water's implementation of its statutory missions within Yuba County, the YRDP's hydroelectric generation provides significant benefits to the region's and to California's electrical grid. The YRDP has an installed capacity of 361.9 MW and generates approximately 1,418,044 MWh per year under existing conditions since the Lower Yuba River Accord (Yuba Accord) was approved.[7] Yuba Water currently sells all of the electrical output from the YRDP into the California Independent System Operator (CAISO) daily and real-time energy markets, and receives payment from the CAISO pursuant to the CAISO daily and real-time energy market payment rules. Generally, electrical generation scheduling is driven by water throughput requirements to meet regulatory flow requirements, consumptive demands, and flood control objectives.

The North American Electric Reliability Corporation (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The YRDP is located in the California/Mexico area of the Western Electricity Coordinating Council (WECC) region of NERC. According to NERC's 2023 forecast, net internal demand for the California/Mexico area is expected to increase from 56,349 MW to 64,566 MW over the period 2024 to 2033 (NERC 2023). NERC predicts that anticipated resource capacity will decline[8] over the same period; however, adequate reserve capacity would still be available. Beginning in the summer of 2024 onwards, the

[6] Various other grants (about $4.5 million) and in-kind contributions (about $45 million from Teichert) also supported the Hallwood Project.

[7] Yuba Water first implemented flows associated with the Yuba Accord in 2006 when it started a pilot project to study the effects of changes in flow on environmental resources. Yuba Water and stakeholders signed the Yuba Accord in 2007 and the SWRCB incorporated the terms of the Yuba Accord into the Yuba Water water right permits in 2008.

[8] The total capacity of traditional baseload generation fuel-types will continue to decline as older generators retire. For example, anticipated reductions will partially be due to 2.8 giga-watts (GW) of natural gas planned for retirement by the end of 2023, 1.2 GW of coal in 2025, and 2.3 GW of nuclear by the end of 2030) (NERC 2023).

California/Mexico subregion is anticipated to show a shortfall of electricity transfers, meaning that imports may be necessary if new resources were to be significantly delayed (NERC 2023).

Hydroelectricity generated from the YRDP would help meet a need for power in the California/Mexico subregion in both the short- and long-term. According to the California Energy Commission (CEC), electricity consumption statewide is projected to grow at an annual average compounded rate of 1.7% annually through 2040 (CEC 2023). The peak hour demand for the California/Mexico subregion occurs during the summer, and long-term demand in the subregion is expected to increase slightly (1.52% annualized average rate) since the previous forecast (NERC 2023). Yuba Water's proposed project would continue to meet part of existing load requirements within the system, which is in need of resources (NERC 2023).

Yuba Water is also proposing the project, in part, because the YRDP provides low-cost power that displaces generation from non-renewable resources (i.e., fossil-fired generation). Displacing the operation of non-renewable facilities may avoid some power plant emissions, thus creating an environmental benefit. New Colgate Powerhouse is a source of firm, dispatchable generation, which is useful for providing both peak summertime regional demands for energy and for providing ancillary services to the regional grid (e.g., spinning reserve). These ancillary services will likely have increasing importance as other non-dispatchable sources of intermittent power generation (e.g., wind and solar generation) are incorporated into the regional grid to help meet renewable portfolio standard requirements.

In addition to these benefits, YRDP hydroelectric generation also provides critical reliability benefits to the northern California electrical grid. The YRDP's New Colgate Powerhouse is a 340-MW facility and is a source of firm, dispatchable generation. The New Colgate Powerhouse is able to ramp from a no-generation operation to maximum generation within eight minutes. This extreme flexibility makes the New Colgate Powerhouse one of the most critical electrical sources in northern California for generating to meet both peak summertime energy demand and Automatic Generation Control response to ensure reliability of the CAISO grid. For example, during the most recent heat emergencies declared by Governor Newsom in August 2020 and September 2022, Yuba Water, at the request of the CAISO, increased generation output to assist the state in meeting extreme electrical demands and to avoid widespread blackouts (State of California 2020; 2022). The New Colgate Powerhouse's extremely flexible generation will likely have increasing importance as other non-dispatchable sources of intermittent power generation (e.g., wind and solar generation) are incorporated into the regional grid to help meet renewable portfolio standard requirements.

The YRDP's existing FERC license expired in 2016, but the YRDP continues to operate under annual licenses issued by FERC. As the above discussion demonstrates, obtaining a new license from FERC for the YRDP's generation of hydroelectricity is critical for Yuba Water to maintain the revenue sources that enable it to implement its statutory missions as assigned by the Legislature and to continue to provide critical support for the stability of the northern California electrical grid. If Yuba Water were unable to obtain, or accept, a new FERC license for the YRDP, the YRDP would be unable to continue to serve these purposes.

In addition to Yuba County-specific benefits, and broader electrical benefits that the YRDP produces, since the late 1980s, Yuba Water has been able to operate the YRDP to produce water supplies that Yuba Water has transferred to communities and water agencies in areas of California with significant unmet water demands, consistent with state policy enacted by the Legislature.[9] Since 1987, Yuba Water has operated the YRDP to transfer more than two million acre-feet of stored water to areas of need. In particular, since 2008 under the Yuba Accord, Yuba Water has transferred a reliable supply to contractors of the Central Valley Project (CVP), the State Water Project (SWP), and others in a total that has exceeded one million acre-feet as of 2022 (YCWA 2024c). These transfers occur under Yuba Water's Yuba Accord Water Purchase Agreement (Yuba Accord Water Purchase Agreement) with the state Department of Water Resources. The Yuba Accord's long-term implementation began in 2008 because the SWRCB, in its Corrected Order WR 2008-0014, incorporated Yuba Accord-based minimum streamflow requirements into Yuba Water's consumptive water-right permits for the YRDP and approved long-term Yuba Accord transfers through 2025 (SWRCB 2008).[10] Yuba Water's *Amended Application for a New License for Major Project – Existing Dam* (AFLA) submitted to FERC in 2017 for a new license for the YRDP incorporates, and is based on, the Yuba Accord minimum streamflow requirements.

The terms of a new license for the YRDP will be a critical factor determining whether Yuba Water is able to continue making water transfers to areas of need consistent with its last several decades of operation. Yuba Accord transfers depend on Yuba Water's implementation of the Yuba Accord minimum streamflow requirements. Transferable water is an increment of water that Yuba Water releases under the Accord requirements. In addition, significant changes to the Accord requirements could significantly impair, or eliminate, the volumes of water that Yuba Water can transfer because those changes could impact the water supplies that Yuba Water can deliver within Yuba County and any transfer water must be surplus to Yuba County's needs. Under the Yuba Accord Fisheries Agreement and the SWRCB's Corrected Order WR 2008-0014, the YRDP's new license will supersede the Yuba Accord's minimum streamflow requirements and therefore will determine whether Yuba Water is able to transfer water during the term of the new license.

As lead agency under CEQA, Yuba Water has developed this DEIR to inform: (1) the decision of Yuba Water's Board of Directors regarding the future discretionary action of accepting a new FERC license for the YRDP; and (2) decisions by state agencies with discretionary approval over some portion of the YRDP relicensing, including the SWRCB (issuance of a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) for the project) and CDFW (e.g., Streambed Alteration Agreement).

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[9] Water Code section 109(a) states, "*It is hereby declared to be the established policy of this state to facilitate the voluntary transfer of water and water rights where consistent with the public welfare of the place of export and the place of import*." Water Code section 475 states, "*The Legislature hereby finds and declares that voluntary water transfers between water users can result in a more efficient use of water, benefiting both the buyer and the seller.* [¶] *The Legislature further finds and declares that transfers of surplus water on an intermittent basis can help alleviate water shortages, save capital outlay development costs, and conserved water and energy.*" In enacting statutes to govern the wheeling of water through conveyance facilities in 1986, the Legislature stated, "*It is the policy of the state to facilitate the voluntary sale, lease, or exchange of water or water rights in order to promote efficient use*." (Cal. Stats. 1986, ch. 918, § 1, p. 3171.)

[10] Under Water Code sections 386 and 1736, Yuba Water has filed a water-right petition to the SWRCB for authorization to continue Yuba Accord transfers through 2050 (SWRCB 2024; YCWA 2024b).

1.2.2 Yuba Water's Mission and its Relationship to the Narrows Project

Yuba Water is also seeking renewal of the FERC license for the Narrows Project to continue to provide a source of renewable, non-flexible base load energy as a hydroelectric generation facility (PG&E 2019). The Federal Power Commission issued an original license for the Narrows Project to PG&E on August 1, 1941,[11] and FERC issued a new license to PG&E on February 11, 1993,[12] effective for the period from February 1, 1993 through January 31, 2023. On January 26, 2018, FERC approved PG&E's request to extend the license term to January 31, 2026. On May 2, 2019, FERC approved the transfer of the license from PG&E to Yuba Water.

On November 14, 2023, Yuba Water filed an application for a new license with FERC to continue to operate and maintain the Narrows Project. Yuba Water has requested a new license term of 50 years for the Narrows Project that would end concurrent with the term of the new FERC license for the YRDP. Yuba Water's request for a 50-year license term is in the public interest and is consistent with FERC's 2017 Policy Statement (82 FR 49501) on establishing license terms to coordinate license terms for projects located in the same river basin. The Narrows Project and the YRDP's Narrows 2 Development[13] are co-located at the USACE's Englebright Dam and have coordinated operations.

Since the YRDP's construction, the YRDP and the Narrows Project have operated in coordination. The Narrows Project is unique in that it operates in coordination with Yuba Water's YRDP and the YRDP's Narrows 2 Development to provide flows to the lower Yuba River. In particular, coordinated operation of the Narrows 1 and Narrows 2 powerhouses have been critical for the protection of Chinook salmon, steelhead, and other fish in the lower Yuba River because the two powerhouses provide the only controllable means of releasing water to the lower Yuba River from behind USACE's Englebright Dam.[14] Additionally, the Narrows Project directly supports the proposed PM&E measures that are part of the FERC Staff Alternative for the YRDP that are being analyzed through FERC's ongoing NEPA analysis of the YRDP Project. As cited in FERC's (2019) FEIS for the YRDP, the Narrows 1 and Narrows 2 powerhouses both release water from the USACE's Englebright Dam and Reservoir and are operated collectively to provide the measures (e.g., downstream flows) analyzed in FERC's (2019) FEIS for the YRDP. It is due to this unique coordination and co-location of the Narrows 1 and Narrows 2 powerhouses that the studies, as well as the NEPA analysis performed in support of the ongoing YRDP relicensing, are directly applicable to the Narrows Project relicensing.

Although Narrows 1 and Narrows 2 operate in a coordinated manner, unlike the YRDP's operation, no water is withdrawn from Narrows Project facilities for irrigation, domestic water supply, steam-electric plant, industrial, or other consumptive purposes (YCWA 2023a). As presented throughout this DEIR, Yuba Water is not proposing any operational or structural

[11] 2 F.P.C. 892 (1941).

[12] 62 FERC ¶ 62,093 (1993).

[13] The Narrows 2 Development is a part of the YRDP that is located on the main stem of the lower Yuba River immediately downstream of USACE's Englebright Dam. The development includes the following features: (1) Narrows 2 Powerhouse Penstock; (2) Narrows 2 Full Bypass; (3) Narrows 2 Powerhouse and Switchyard; (4) Narrows 2 Partial Bypass; and (5) about 2.27 miles of existing project roads. The Narrows 2 Development does not include any recreation facilities or recreation roads.

[14] The United States built Englebright Dam to impound hydraulic mining debris, so it has no low-level outlet and, other than through the Narrows 1 and Narrows 2 powerhouses, the only means of releasing water from behind the dam is through spills over it.

modifications to the Narrows Project, and thus, consistent with the Narrows Project's existing license, Yuba Water proposes to operate the Narrows 1 Powerhouse in a manner that supports the measures that are the subject of the ongoing YRDP relicensing. Accordingly, Yuba Water has determined that it would be appropriate to jointly address the environmental impacts of relicensing both the YRDP and the Narrows Project in this DEIR.

1.2.3 Status of NEPA Compliance for the FERC Relicensing Process

Any new FERC licenses for the YRDP and the Narrows Project are subject to numerous requirements under the FPA and additional applicable statutes, including NEPA. A summary of the NEPA-related activities that have been undertaken by FERC is provided below.

1.2.3.1 YRDP

Under the provisions of the FPA, FERC must decide whether to issue a license to Yuba Water for the YRDP and what conditions should be placed on the new license. To issue a license for the YRDP, FERC must determine that the YRDP will be best adapted to implement a comprehensive plan for improving or developing the waterway. In addition to the power and developmental purposes for which licenses are issued (e.g., flood control, irrigation, and water supply), FERC must give equal consideration to: (1) the purposes of energy conservation; (2) the PM&E of fish and wildlife, including related spawning grounds and habitat; (3) the provision of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

In anticipation of the 2016 expiration of the original license for the YRDP, Yuba Water initiated the relicensing process by conducting environmental studies and preparing and filing with FERC an Application for a New License Major Project – Existing Dam (FLA) for the YRDP in April 2014. In June 2017, Yuba Water filed with FERC an AFLA, with errata filed July 21, September 15, and November 1, 2017.

In January 2019, FERC, along with the USACE as a cooperating agency, issued a *Final Environmental Impact Statement for Hydropower License, Yuba River Development Project, Project No. 2246-065 – California* (the FEIS) pursuant to NEPA. As documented in Section 1.4 of the FEIS (FERC 2019), FERC issued a DEIS for the relicensing of the YRDP on May 30, 2018, and held two public meetings on July 10, 2018 in Marysville, California, to receive public comments on the DEIS. Statements made at the meetings were recorded by a court reporter and incorporated into FERC's public record for the proceeding.[15] Written comments on the DEIS were due July 30, 2018. Appendix B of the FEIS (FERC 2019) documents the comments that FERC received and provides FERC's responses to those comments and indicates, where appropriate, how it modified the text of the FEIS. A copy of the FEIS (FERC 2019) is available to the public at Yuba Water's offices, 1220 F Street, Marysville, CA, as well as from Yuba Water's relicensing website at: https://www.yubawater.org/217/Yuba-River-Development-Project-Relicensi.

In the FEIS, FERC assessed the potential environmental and economic effects of continuing to operate the YRDP: (1) as proposed by the applicant (i.e., Yuba Water); (2) with FERC's

[15] See transcripts of the July 10, 2018, scoping meetings and associated errata, FERC eLibrary Accession Nos. 20180815-4001, 20180815-4002, 20180815-4003, 20180815-4004, and 20180905-4002.

recommended measures; and (3) with any mandatory conditions prescribed by state and Federal agencies. The 2019 FEIS also evaluated the potential impacts associated with operations of the YRDP and alternatives to the proposed project. It also includes recommendations to FERC on whether to issue a new license, and if so, includes recommended terms and conditions to become a part of any new license. FERC also considered the effects of the No Action Alternative.[16] Important issues that were identified and addressed in FERC's 2019 FEIS included the effects of continued project operation on instream flows, shoreline erosion and sediment transport, water quality, fishery resources and fish passage, terrestrial resources, threatened and endangered species, recreation and land use, and cultural resources.

On September 18, 2020, FERC issued a BA for the YRDP under the federal Endangered Species Act (ESA) and requested initiation of formal ESA consultation with NMFS. NMFS responded to FERC on October 16, 2020, and asserted that the BA did not provide all the information needed to initiate consultation.

In a letter to Yuba Water dated March 8, 2021, FERC announced its plans to prepare an SEIS for the YRDP and a revised BA. FERC explained that the SEIS will address new information in the administrative record, including Section 401 WQC conditions, and may revise FERC staff's preferred licensing alternative (FERC 2021). FERC's March 8, 2021 AIR requested that Yuba Water evaluate options for the equitable allocation of water to provide cooler water temperatures in the lower Yuba River at times by consulting with PG&E (Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310) and Lower Drum Hydroelectric Project (FERC Project No. 14530)) and Nevada Irrigation District (NID) (Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and Deer Creek Hydroelectric Project (FERC Project No. 14531)) and developing an agreed-upon analysis of the amount of additional water from either storage or transfers necessary in Dry and/or Critically Dry years (or combination of dry-type years) to maintain cooler water in the lower Yuba River for federally listed species protection from July through November. Preparation of FERC's SEIS is currently in progress.

Following completion of the SEIS and the revised BA, FERC will re-initiate ESA consultation with NMFS, and NMFS then is expected to prepare a biological opinion. Following ESA consultation, FERC is expected to issue a new YRDP license so that Yuba Water may continue to operate and maintain the YRDP, subject to the terms and conditions as described in the new FERC license.

1.2.3.2 Narrows Project

As with the YRDP relicensing, FERC must evaluate the potential environmental effects of relicensing the Narrows Project, and it must consider reasonable alternatives to the licensee's proposed action in compliance with NEPA, FERC regulations, and other applicable laws. The decision on whether to prepare an environmental assessment (EA) or an environmental impact statement (EIS) will be made once FERC determines the scope of effects and measures under

[16] Under the No Action Alternative, FERC stated that the project would continue to operate as it has in the past. None of Yuba Water's proposed measures or the resource agencies' recommendations and mandatory conditions would be required. None of the FERC staff-recommended measures would be implemented, including measures to enhance environmental conditions for fish and wildlife within the Project Area, measures to improve flow conditions downstream of the project for salmonids, and measures that would expand and improve recreation opportunities (FERC 2019, p. xlvii).

consideration. FERC's scoping process will help determine the required level of analysis and satisfy the NEPA scoping requirements, irrespective of whether FERC prepares an EA or an EIS.

Given that the relicensing for YRDP, as well as the other upper Yuba River Watershed relicensings[17] for NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and PG&E's Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310), Lower Drum Hydroelectric Project (FERC Project No. 14531) and Deer Creek Hydroelectric Project (FERC Project No. 14531) are ongoing with FERC's intent to issue a SEIS for those five projects, Yuba Water believes there would be significant advantages to aligning the Narrows Project's post-application relicensing activities with the relicensing activities for those projects; in particular, FERC's NEPA analysis and Section 7 ESA consultation. The advantages would include cost and time savings to FERC, Yuba Water, resource agencies, and other stakeholders, as well as ensuring a comprehensive analysis of the interrelated operations of all the watershed projects. Yuba Water intends to work with FERC and interested parties to ensure that the SEIS's basin-wide analyses adequately consider the Narrows Project.

Pursuant to NEPA, FERC staff will prepare either an EA or an EIS that will be used by FERC to determine whether, and under what conditions, to issue a new license for the Narrows Project. On June 7, 2024, FERC circulated Scoping Document 1 (SD1) to advise relicensing participants on the proposed scope of FERC's NEPA document for the Narrows Project and to seek additional information pertinent to that analysis (FERC 2024a). FERC's comment period on the NEPA scoping document for the Narrows Project closed on August 6, 2024. On December 4, 2024, FERC issued Scoping Document 2 (SD2) to identify issues to be analyzed in the NEPA document (FERC 2024a). Based on comments received during FERC's scoping process, FERC updated SD1 to reflect its current view of the issues to be considered in the NEPA document for the Narrows Project. Key changes from SD1 to SD2 included the following.

- FERC staff modified the upstream extent of the geographic scope of the Narrows Project to include Englebright Dam and Reservoir.
- For water and aquatic resources, FERC staff modified the geographic scope of the cumulative effects analysis to include Englebright Dam and Reservoir and downstream through the lower Yuba River to the confluence with the Feather River, the lower Feather River, the lower Sacramento River, and through the Sacramento-San Joaquin Delta to the San Francisco Bay.[18]
- FERC staff will conduct an analysis of shot rock (riprap) in the Narrows Dam Reach.
- FERC identified cumulative effects from the Narrows Project as having the potential to affect geology, soils, fisheries, and aquatic resources.

[17] This DEIR uses the term "YB/DS projects" to refer to four other FERC relicensing projects located in the upper Yuba River Watershed, which include: (1) NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266); and (2) PG&E's Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310), Lower Drum Hydroelectric Project (FERC Project No. 14531) and Deer Creek Hydroelectric Project (FERC Project No. 14531).

[18] FERC (2024a) acknowledged that: (1) the geographic scope of the cumulative effects analysis is not the same as the geographic scope of needed studies for the Narrows Project relicensing; and (2) the expanded geographic scope does not imply that Narrows Project-related effects extend significantly beyond the Yuba River downstream of Englebright Dam but rather that actions occurring downstream to the San Francisco Bay affect the same anadromous fish populations and essential fish habitat that may be cumulatively affected by the Narrows Project.

FERC's SD1 (2024a) and SD2 (2024b) for the Narrows Project identified a preliminary list of environmental issues[19] to be addressed for NEPA compliance purposes. FERC (2024a; 2024b) has indicated that the issues identified by an asterisk (*) in the list of environmental resources to be evaluated (see below) in FERC's NEPA document for the Narrows Project will be analyzed for both cumulative and site-specific effects. On February 26, 2025, FERC issued a "*Notice of Application Ready for Environmental Analysis and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions"* for the Narrows Project. No new environmental issues were identified in FERC's 2025 REA notice.

- ***Fisheries and Aquatic Resources***
    - Effects of continued Narrows Project operation on water quantity and water quality*
    - Effects of continued Narrows Project O&M on aquatic habitat and fishery resources*
- ***Terrestrial Resources***
    - Effects of continued Narrows Project O&M, including vegetation management, on botanical and wildlife species, including any special-status species and nesting birds occurring in the Project Area
    - Effects of non-native, invasive plant species potentially introduced and spread as a result of Narrows Project operations
- ***Threatened and Endangered Species***
    - Effects of continued Narrows Project O&M on: (1) the Federally threatened California red-legged frog, valley elderberry longhorn beetle, and vernal pool fairy shrimp; and (2) the proposed threatened northwestern pond turtle, western spadefoot, and monarch butterfly
    - Effects of continued Narrows Project O&M on Federally listed species and their habitat, including the threatened Central Valley spring-run Chinook salmon, California Central Valley steelhead Distinct Population Segment (DPS), and North American green sturgeon Southern DPS*
- ***Geology and Soils***
    - Effects of bank erosion on the south bank of the lower Yuba River*
    - Effects of hillslope erosion within the bypassed reach*
    - Effects of continued Narrows Project O&M on turbidity, shoreline erosion, and suspended sediment loads*
    - Effects of sediment movement on or within the Narrows Project shorelines and streambanks along the project impoundment
    - Effects of shot rock (riprap) within the river channel in the vicinity of the Narrows 1 and Narrows 2 powerhouses (e.g., Englebright Dam Reach)

[19] The list is not intended to be exhaustive or final, but contains those issues raised to date that could have substantial effects.

- ***Recreation, Land Use, and Aesthetics***
    - Effects of continued Narrows Project O&M on recreational resources in the Project Area
    - Effects of continued Narrows Project O&M on land use and aesthetic resources in the Project Area
- ***Cultural Resources***
    - Effects of continued Narrows Project O&M on historic and archaeological resources, or traditional cultural properties that may be eligible for inclusion in the National Register of Historic Places
- ***Developmental Resources***
    - Effects of proposed or recommended PM&E measures[20] on project economics, hydropower generation and economics, and continued Narrows Project O&M on local and regional economies

The 60-day comment period on FERC's REA notice closed on April 28, 2025. Parties that filed comments with FERC included the SWRCB, CDFW, U.S. Fish and Wildlife Service (USFWS), NMFS, and various non-governmental organizations (NGOs). According to the FERC relicensing process, Yuba Water has until June 11, 2025 to submit responses to the REA comments to FERC. In consideration of the comments and responses received in response to the REA notice, FERC will evaluate Yuba Water's license application for the Narrows Project to determine how it will be processed. Because FERC must comply with NEPA, it will further identify the issues and level of analysis required for its licensing action and prepare a NEPA document, which also will be subject to public review when it becomes available. FERC initiated the NEPA process by issuing a *Notice of Intent to Prepare an Environmental Assessment* (EA) for the Narrows Project on May 12, 2025.[21] Based on information in the FERC record, including comments filed on FERC's REA Notice, FERC staff do not anticipate that relicensing the Narrows Project would constitute a major federal action significantly affecting the quality of the human environment (FERC 2025a). Consequently, FERC (2025a) states that the EA[22] will be issued for a 45-day comment period, which is anticipated to occur during November 2025.

Although the evaluation of potential impacts resulting from the Narrows Project in this DEIR is conducted independently of FERC's NEPA process, the environmental resource areas and associated issues identified by FERC for NEPA purposes are generally consistent with those identified in this DEIR for CEQA review and compliance purposes. Therefore, even though FERC has not yet issued a NEPA document, the identification and evaluation of environmental resource issues for the Narrows Project in this DEIR addresses the issues that are of concern to Narrows Project relicensing participants, including those parties that are also CEQA responsible agencies

[20] SD2 (FERC 2024b) does not address recommendations for FERC license conditions, such as PM&E measures (e.g., settlement agreement conditions, resource management plans) because such recommendations will be addressed in the NEPA document, or any license order issued for the Narrows Project. FERC's February 26, 2025 REA notice requested terms and comments, recommendations, terms and conditions, and prescriptions that will be considered by FERC during the NEPA process.

[21] Available in FERC's eLibrary at Accession No. 20250512-3018 (Filed on May 12, 2025).

[22] For tracking purposes under NEPA, the unique identification number for documents relating to FERC's environmental review of the Narrows Project is EAXX-019-20-000-1747040730 (FERC 2025a).

(e.g., SWRCB, CDFW) who will need to rely upon this DEIR as part of their decision-making process for the Narrows Project relicensing.

1.2.4 Status of Federal ESA Section 7 Consultation for the FERC Relicensing Process

1.2.4.1 YRDP

On May 31, 2018, as part of its ESA consultation, FERC requested concurrence from the USFWS regarding FERC's finding that the YRDP may affect, but is not likely to adversely affect, certain species. On June 22, 2018, USFWS concurred with FERC's determination, completing FERC's ESA consultation with USFWS (**Appendix 2D**). Following completion of FERC's SEIS, there may be a need for FERC to reconsult with the USFWS if there are changes to FERC's proposed action that could result in new adverse effects or have the potential to alter USFWS's previous conclusions.

On September 18, 2020, FERC issued a BA under the ESA and requested initiation of formal ESA consultation with NMFS. NMFS responded to FERC on October 16, 2020, asserting that the BA did not provide all the information needed to initiate consultation. In a letter dated March 8, 2021, FERC announced its plans to prepare a SEIS and revised BA to provide the information requested by NMFS. FERC explained that the SEIS will address new information in the administrative record and may revise FERC staff's preferred project alternative. Following completion of the SEIS and a revised BA, FERC will request reinitiation of ESA consultation with NMFS, after which NMFS is expected to prepare a biological opinion. Given the ongoing relicensing processes of YRDP, NID's Yuba-Bear Hydroelectric Project, and PG&E's Upper Drum-Spaulding Hydroelectric Project, Lower Drum Hydroelectric Project and Deer Creek Hydroelectric Project and consistent with FERC's intent to issue a single SEIS for those three projects, it is anticipated that FERC would reinitiate Section 7 ESA consultation on all three projects. Following completion of the SEIS and ESA consultation process, FERC is expected to issue a new YRDP license so that Yuba Water may continue to operate and maintain the YRDP, subject to the terms and conditions as described in the new FERC license.

1.2.4.2 Narrows Project

Similar to the other FERC relicensing processes that are ongoing within the Yuba River Watershed, it is anticipated that the Narrows Project would be included as part of the proposed action that is described and evaluated in FERC's revised BA that would be used to support a Section 7 ESA consultation with NMFS. At this time, FERC has stated that it is unclear whether the Narrows Project would result in potentially adverse effects to ESA-listed species and critical habitat under the jurisdiction of the USFWS. Using information contained within Yuba Water's FLA for the Narrows Project and potentially informed by the NEPA process, it is anticipated that FERC will determine whether a separate ESA consultation with the USFWS is warranted.

Following completion of the SEIS and ESA consultation process, FERC is expected to issue a new license for the Narrows Project so that Yuba Water may continue to operate and maintain the Narrows Project subject to the terms and conditions as described in the new FERC license.

1.3 Agency Coordination and Public Involvement Processes

1.3.1 YRDP FERC Relicensing Process

FERC's regulations (18 Code of Federal Regulations [C.F.R.], sections 5.1–5.16) require that applicants consult with appropriate resource agencies, Native American tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, the ESA, the National Historic Preservation Act (NHPA), and other Federal statutes.

To support development of the EIS, FERC conducted scoping to determine what issues and alternatives should be addressed. A NEPA SD1 was issued by FERC on January 4, 2011, and an environmental site review of the YRDP was held on February 1, 2011. Two scoping meetings, both advertised in the Appeal Democrat, The Union, and The Mountain Messenger, were held on February 2, 2011, in Marysville, California, to request oral comments on the project. A court reporter recorded all comments and statements made at the scoping meetings, and these are part of FERC's public record for the project. The afternoon meeting was attended by individuals representing NGOs and public agencies, including the United States Department of Agriculture, Forest Service (USFS), USFWS, NMFS, SWRCB, and CDFW. The evening meeting was attended by tribal and NGO representatives and members of the public. In addition to comments provided at the scoping meetings, over 30 entities provided written comments pertaining to SD1, the preliminary application document, and additional study needs. Based on comments at the public meetings and written comments FERC received on SD1 by March 7, 2011, FERC issued a revised SD2 on March 18, 2011.

Following Yuba Water's filing of its application for a new license in 2014 and AFLA in 2017, FERC solicited and received written comments on the application from more than 80 entities. On June 26, 2017, FERC issued a notice that Yuba Water's application was accepted. The notice also stated that the application was REA and solicited comments, recommendations, preliminary terms and conditions, and preliminary fishway prescriptions.

FERC distributed the Notice of Availability (NOA) of the DEIS for the YRDP on May 30, 2018. The notice included a deadline of July 30, 2018 for submission of written comments on the DEIS (60 days). FERC staff also held a second round of public outreach for the purpose of receiving comments on the DEIS,[23] which included afternoon and evening public meetings in Marysville, California on July 10, 2018. The meetings were announced in local newspapers and in the Federal Register. In addition, FERC held a meeting with Federal and state fish and wildlife agencies to discuss those agencies' FPA section 10(j) recommended fish and wildlife conditions on August 29, 2018, in Sacramento, California. The meeting was announced in local newspapers and in the Federal Register. On January 2, 2019, FERC distributed the NOA of the FEIS for the YRDP.[24]

[23] FERC's 2018 DEIS for the YRDP is available on FERC's eLibrary under the YRDP docket at accession number 20180530-3011 (Filed on May 30, 2018).

[24] FERC's 2019 FEIS for the YRDP is available on FERC's eLibrary under the YRDP docket at accession number 20190102-3000 (Filed on January 2, 2019).

During the relicensing process, Yuba Water collaborated with Federal and state resource agencies, Native American tribes, NGOs, and members of the public (collectively, the relicensing participants) to develop proposed new license conditions. Yuba Water held more than 150 meetings with interested parties, including the SWRCB's representatives, to discuss issues and to collaboratively develop conditions to be included in the new FERC license. The FERC Staff Alternative presented in the FEIS, in combination with resource agency terms and conditions (see Chapter 2, Project Description), reflects the result of collaborative efforts between Yuba Water and the YRDP relicensing participants. The relicensing website for the YRDP provides information about the relicensing process, access to public documents, and details about the Project, public participation, communication plans, and meetings. The website can be accessed at: https://www.yubawater.org/217/Yuba-River-Development-Project-Relicensi.

1.3.2 Narrows Project FERC Relicensing Process

On January 28, 2021, Yuba Water filed with FERC a NOI to File an Application for a New License, a Pre-Application Document (PAD) and a request to use FERC's traditional licensing process (TLP) for the Narrows Project. The NOI stated Yuba Water's intent to file an application for a new license no later than January 31, 2024. On June 6, 2023, Yuba Water filed with FERC a *Draft Application for a New License Major Project – Existing Dam for YCWA's Narrows Hydroelectric Project, FERC Project Number 1403 (DLA)*, and initiated a 90-day public comment period that closed on September 4, 2023. Following consideration of comments received on the DLA, Yuba Water filed its *Final Application for a New License Major Project – Existing Dam for YCWA's Narrows Hydroelectric Project (Project), FERC Project Number 1403 (FLA)* with FERC on November 14, 2023. Yuba Water proposes to continue operating the Narrows Project with no modification to existing Narrows Project facilities, Project Boundary, or operations, and the adoption of the resource management measures described in its November 2023 FLA.

Yuba Water distributed notices of the availability of the 2021 PAD (letter dated January 28, 2021), the June 2023 DLA (letter dated June 6, 2023), and the November 2023 FLA (letter dated November 14, 2023) to ten Federal agencies, nine state agencies, two local agencies, as well as numerous businesses, NGOs, and members of the public in the expectation that these parties may be interested in the Narrows Project relicensing. FERC also initiated consultation with Native American tribes potentially affected by the relicensing of the Narrows Project.

Yuba Water made a copy of the Application for New License available to these parties or their designee. The relicensing website for the Narrows Project provides information about the relicensing process, access to public documents, and details about the Project, public participation, communication plans, and meetings. The website can be accessed at: https://www.yubawater.org/357/Narrows-Relicensing.

1.3.2.1 Outreach with Native American Tribes Regarding Notice of Opportunity to Consult Under Assembly Bill 52

Federally recognized Indian tribes and other Native Americans that may be affected by the relicensing of the Narrows Project were identified based on information provided to Yuba Water by the Native American Heritage Commission (NAHC) on May 4, 2020. The identified organizations included:

- United Auburn Indian Community of the Auburn Rancheria
- Colfax-Todds Valley Consolidated Tribe
- Tsi Akim Maidu
- Enterprise Rancheria of Maidu Indians
- Mooretown Rancheria of Maidu Indians

As part of reinitiating the AB 52 process for the YRDP relicensing with simultaneous review of the Narrows Project relicensing, Yuba Water sent emails to each potentially interested California Native American Tribe on October 18, 2024, regarding an early engagement opportunity to discuss the Proposed Projects prior to formal AB 52 consultation notification. Yuba Water formally re-initiated the CEQA and AB52 processes and procedures for the YRDP relicensing along with the Narrows Project relicensing by sending letters on October 31, 2024, via email and United States Postal Service of the opportunity to consult to Native American tribes that requested formal notification, and courtesy notification to other potentially interested California Native American tribes identified by the NAHC. United Auburn Indian Community (UAIC) and Enterprise Rancheria Estom Yumeka Maidu (Enterprise Rancheria) have each requested consultation for the proposed Project in response to the notice of opportunity. Consultation with Enterprise Rancheria and UAIC is in progress.

1.3.3 CEQA Process for the YRDP and Narrows Project

1.3.3.1 November 7, 2022 Notice of Intent and CEQA Public Scoping Process

On November 7, 2022, Yuba Water issued a *Notice of Intent to Rely on FERC/USACE Final Environmental Impact Statement, in Combination with a Supplemental Analysis, to Satisfy CEQA for the Yuba River Development Project Relicensing and Notice of CEQA Scoping Meetings.* The 45-day period to comment on the NOI extended to December 22, 2022. Yuba Water held two CEQA public scoping meetings during the NOI public comment period to discuss and receive input on the issues that are not addressed in FERC's FEIS, but should be addressed in Yuba Water's CEQA Supplemental Analysis. The public scoping meetings were undertaken in an open house format and allowed agencies and individuals an opportunity to submit written comments to Yuba Water for consideration in the development of the CEQA Supplement. Yuba Water and their consultants were available during the open house to discuss proposed project physical footprint and features, proposed operations, CEQA process, and respond to public questions, as possible. Participants of the open house were requested to document comments or questions on the proposed project and submit during the scoping meeting, or via mail or email by the end of the public scoping period to Yuba Water.

Overall, a total of 15 individual commenters submitted a total of 57 comments via five letters during the public comment period (see **Appendix 1A**, 2022 CEQA Scoping Report). No comments were submitted during the public meetings.

1.3.3.2 2021 Outreach with Native American Tribes Regarding Notice of Opportunity to Consult Under Assembly Bill 52

Pursuant to Public Resources Code Section 21080.3.1(d) and Assembly Bill No. 52 (AB 52),[25] Yuba Water reached out to local Native American tribes and extended a formal invitation to consult with Yuba Water on the proposed YRDP relicensing project. In 2021, letters were sent to the following Native American tribes and several individuals, including:

- UAIC
- Colfax-Todds Valley Consolidated Tribe
- Greenville Rancheria Tribe of Maidu
- Mooretown Rancheria of Maidu Indians
- Pakan'yani Maidu of Strawberry Valley Rancheria
- Mechoopda Indian Tribe of Chico Ranch
- Washoe Tribe of Nevada and California
- Shingle Springs Band of Miwok Indians
- Enterprise Rancheria
- Nevada City Rancheria
- Tsi Akim Maidu

Yuba Water received one response from UAIC on the initial letter. On October 3, 2022, Yuba Water sent a follow-up letter to UAIC indicating that it was re-initiating work on the CEQA document and would like to reinitiate consultation with the UAIC under AB 52. Yuba Water requested that UAIC respond within 30 days if the UAIC was interested in reinitiating the consultation, but a response was not received. Since the initial distribution in 2021, the Shingle Springs Band of Miwok Indians and the Enterprise Rancheria have requested to be added to Yuba Water's AB 52 list.

1.3.3.3 October 28, 2024 Notice of Preparation and CEQA Public Scoping Process

Because FERC is preparing a supplement to its 2019 FEIS for the YRDP and has not yet issued a NEPA environmental compliance document for the Narrows Project, Yuba Water ultimately elected not to prepare a CEQA Supplement but instead to prepare a new, stand-alone EIR for both the YRDP and the Narrows Project to comply with CEQA.

On October 28, 2024, Yuba Water released a *Notice of Preparation of a Draft Environmental Impact Report and Notice of Public Scoping Meetings for the Yuba River Development Project FERC Relicensing (Project No. 2246) and the Narrows Hydroelectric Project FERC Relicensing (Project No. 1403)* (see Appendix 1B, CEQA Scoping Report and Attachment 1-2, for a copy of the October 28, 2024 Notice of Preparation [NOP]). The NOP informed responsible and trustee agencies and other interested parties about Yuba Water's change in CEQA compliance approach for the FERC relicensings and its intention to prepare a joint EIR and hold additional scoping

[25] AB 52 requires public agencies to consult with Native American tribes during the CEQA process. For additional information, see https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB52&search_keywords=

meetings for both the YRDP and Narrows Project (CEQA Guidelines section 15165). The NOP was circulated for a 30-day review and comment period from November 1, 2024 through December 2, 2024.

To further supplement the extensive scoping that has occurred during the FERC relicensing process, Yuba Water held two CEQA public scoping meetings during the NOP public comment period at the following locations.

Date	***Time***	***Location***
November 13, 2024	2:00 to 4:00 PM	Yuba Water Agency 1220 F Street Marysville, California 95901
November 14, 2024	5:00 to 7:00 PM	Gold Miners Inn 121 Bank Street Grass Valley, California 95945

The public scoping meetings were undertaken in an open house format and allowed agencies and individuals an opportunity to submit written comments to Yuba Water for consideration in the development of this DEIR. Yuba Water and their consultants were available during the open house to discuss the Proposed Projects' physical footprint and features, proposed operations, CEQA process, and respond to public questions, as possible. Participants of the open house were requested to document comments or questions on the Proposed Projects and submit them during the scoping meeting, or via mail or email by the end of the public scoping period to Yuba Water.

Four commenters submitted letters during the public comment period (see **Appendix 1B**, 2024 CEQA Scoping Report). No comments were submitted during the public meetings.

1.4 Areas of Known Controversy

Pursuant to CEQA Guidelines Section 15123(b)(2), a lead agency is required to include areas of controversy raised by agencies and the public in an EIR. Areas of controversy have been identified for the Proposed Projects based on input provided as part of the FERC relicensing process for the YRDP and Narrows Project, and through comments provided during the CEQA scoping process (including the 2022 NOI and the 2024 NOP).

1.4.1 YRDP

The following areas of controversy have been identified to date.

- **Alternatives Analysis**
    - Over the 15-year duration of the ongoing FERC relicensing process for the YRDP, various operational scenarios for the YRDP have been proposed by several FERC relicensing participants, and the resultant effects of those alternative operational proposals on flow and water temperature conditions in the lower Yuba River have

been the subject of considerable discussion and analyses. Chapter 3 (Alternatives) of this DEIR presents additional information about the alternatives evaluated in this DEIR, as well as other alternatives that Yuba Water declined to consider further.

- **CWA Section 401 Compliance Issues**
    - The uncertainty of future CWA regulatory terms imposed by the SWRCB's WQCs that will be issued for the YRDP and the Narrows Project is an issue of concern with respect to potential changes to YRDP operations, and resultant changes in reservoir storage, flow release patterns and water temperature regimes in the lower Yuba River. The hydrologic changes that may be imposed by conditions in the WQCs have the potential to result in direct and/or redirected impacts on fisheries resources, water supply, water quality, and other environmental resources.
- **Bay-Delta Water Quality Control Plan Update**
    - Future regulatory constraints associated with the SWRCB's Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and its Tributaries, Delta Eastside Tributaries, and Delta (Bay-Delta Plan Update) and the potential for such regulatory constraints to adversely affect YRDP operations within the Yuba River Watershed, as well as flow and water temperature throughout the Central Valley, are of concern due to the potential for direct and redirected impacts on fisheries resources, water supply, water quality, and other environmental resources.
- **Suggested Mitigation Measures**
    - Some commenters suggested that the EIR should consider mitigation for YRDP impacts related to Large Woody Material (LWM) and sediment management on the North Yuba River below New Bullards Bar Dam that were not addressed in the FERC (2019) FEIS.
    - Some commenters also suggested that the EIR should consider implementation of lower Yuba River floodplain restoration activities to accompany the riparian vegetation planning that was recommended by FERC in the 2019 FEIS.

1.4.2 Narrows Project

To date, no specific areas of controversy or issues to be resolved for the Narrows Project have been identified. To the extent that Narrows Project operations pertain to the coordinated operations of the YRDP, the issues discussed above in Section 1.4.1 may also be applicable to the Narrows Project.

1.5 Background Regarding Required Project Permits and Approvals

As noted, given that the FERC relicensing for the YRDP and additional FERC relicensings in the Yuba River Watershed are ongoing, Yuba Water believes there would be significant advantages to aligning the Narrows Project's post-application relicensing activities (e.g., FERC's NEPA analysis and Section 7 ESA consultation) with the ongoing and future YRDP relicensing activities.

These would include cost and time savings to FERC, Yuba Water, resource agencies and other stakeholders, as well as ensuring a comprehensive analysis of the interrelated operations of both projects. Following the filing of the 2017 AFLA for the YRDP and the 2023 FLA for the Narrows Project, Yuba Water has continued to work with FERC and the other parties to align relicensing activities that will support the timely issuance of both licenses.

1.5.1 Status of Clean Water Act Section 401 Compliance

Section 401 of the federal CWA authorizes a state to issue a WQC with conditions on a federal license for a hydroelectric project to ensure that the project complies with state water quality standards. The WQC-issuing agency in California is the SWRCB. With respect to both the YRDP and the Narrows Project, Yuba Water is acting as the CEQA Lead Agency for each relicensing project, and the SWRCB is a Responsible Agency in the CEQA process.

A CWA Section 401 WQC confirms that a project complies with all applicable water quality standards, limitations and restrictions, and is required prior to issuance of the FERC license. WQCs for FERC's relicensing of the YRDP and the Narrows Project require an analysis of those projects' overall effects on water quality, including whether the designated beneficial uses identified in a Basin Plan (in this case, the SWRCB's Bay-Delta Plan, as well as the Central Valley Regional Water Quality Control Board (CVRWQCB) Water Quality Control Plan for the Sacramento and San Joaquin River Basins)[26] are adequately protected. While the SWRCB is a formal participant in the FERC relicensing process, including input and review throughout the FERC EIS process, it will also use this DEIR to complete its review of the YRDP and Narrows Project's effects consistent with CEQA.

Federal law provides that the SWRCB must act on a WQC application within a reasonable period of time (not to exceed one year), or else the WQC is considered waived with respect to the application. This DEIR serves as an informational source for the SWRCB's own decision-making regarding CEQA and FERC relicensing.

1.5.1.1 YRDP

On December 30, 2024, Yuba Water filed an application for a WQC with the SWRCB in support of its application for a new FERC license for the YRDP. In anticipation of filing the WQC application, Yuba Water and the SWRCB participated in a pre-filing meeting on October 10, 2024 consistent with the regulatory requirements described in 40 C.F.R. §121.4. A copy of Yuba Water's WQC application was also filed with FERC.[27] As stated in FERC's December 31, 2024 acknowledgement,[28] if the SWRCB fails or refuses to act on the YRDP WQC request on or before December 30, 2025, then the certifying authority is deemed waived pursuant to Section 401(a)(1) of the CWA, 33 U.S.C. § 1341(a)(1). The WQC application package for the YRDP that Yuba Water submitted to the SWRCB included background information and recommended findings for the WQC (Appendix 2E), which are included as part of the YRDP Proposed Project that is evaluated in this DEIR.

[26] Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region for the Sacramento River Basin and the San Joaquin River Basin. Fifth Edition. Revised February 2019 (with Approved Amendments).

[27] Available in FERC's eLibrary at Accession No. 20241230-5127 (Filed on December 30, 2024).

[28] Available in FERC's eLibrary at Accession No. 20241231-3020 (Filed on December 31, 2024).

1.5.1.2 Narrows Project

As previously discussed, FERC issued a REA notice on February 26, 2025, which included a 60-day deadline for filing comments, recommendations, terms and conditions, and prescriptions that closed on April 28, 2025. In compliance with 18 C.F.R. §4.34(b)(5), Yuba Water filed proof of submittal of a WQC application for the Narrows Project with FERC on December 30, 2024.[29] As stated in FERC's January 3, 2025 acknowledgement,[30] if the SWRCB fails or refuses to act on the Narrows Project WQC request on or before December 30, 2025, then the certifying authority is deemed waived pursuant to Section 401(a)(1) of the CWA, 33 U.S.C. § 1341(a)(1).

The WQC application package for the Narrows Project that Yuba Water submitted to the SWRCB included background information and recommended findings for the WQC (**Appendix 2G**), which are included as part of the Narrows Proposed Project that is evaluated in this DEIR.

1.5.2 Other Permits

The new proposed FERC license conditions for the YRDP and the Narrows Project include construction and maintenance activities that will likely require permits from other entities. Yuba Water will obtain all required regulatory permits, prior to undertaking these activities. The required permits may include the following:

- USACE CWA Section 404 Permit
- USFS Road Use Permit and Special Use Permits
- State Historic Preservation Officer NHPA Section 106 consultation
- CESA Incidental Take Permit (ITP)
- CDFW Section 1600 Streambed Alteration Agreement
- CVRWQCB Waste Discharge Requirement
- National Pollution Discharge Elimination System (NPDES) Permit[31]
- CALFIRE and/or Air Quality Management District (AQMD) Burn Permit
- AQMD Authority to Construct / Permit to Operate
- State of California Construction General Permit
- Caltrans Transportation Permit (Oversize/Overweight Vehicles)
- California Department of Industrial Relations, Division of Occupational Safety and Health Permit to Operate Air Pressure Tank

[29] Available in FERC's eLibrary at Accession No. 20241230-5125 (Filed on December 30, 2024).

[30] Available in FERC's eLibrary at Accession No. 20250103-3006 (Filed on January 3, 2025).

[31] The SWRCB adopted a general NPDES permit for stormwater discharges associated with construction activity (Construction Stormwater General Permit) in Order No. 2022-0057-DWQ/NPDES Permit CAS000002, which became effective on September 1, 2023. Construction activities that disturb one or more acre of land are required to obtain coverage under the Construction Stormwater General Permit, which involves filing of a NOI and preparation and implementation of a stormwater pollution prevention plan (SWPPP).

- County Permits (e.g., annual environmental health permit for hazardous materials storage, grading, etc.)

1.5.3 Other Intended Uses of the DEIR

This DEIR has been prepared in compliance with the requirements of CEQA. Several agencies have responsibility for issuing permits or approvals for the YRDP and the Narrows Project or for resources that may be affected by the two FERC relicensing projects. Before the selection and approval of an alternative is considered, the lead agency must comply with the necessary state environmental review requirements. This DEIR is intended to provide sufficient CEQA support for approval, if appropriate, for the project and related decisions by Yuba Water, trustee agencies, and responsible agencies. The roles and responsibilities of some of these agencies are summarized below.

Under CEQA, a ***responsible agency*** is a public agency, other than the lead agency, which has responsibility for carrying out or approving a project (Public Resources Code § 21069). In most circumstances, CEQA requires a responsible agency to use the lead agency's CEQA document to support its own decision-making process (CEQA Guidelines § 15096). A ***trustee agency*** is a state agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California that may be affected by a project (Public Resources Code § 21070). Trustee agencies must be consulted when the lead agency is preparing a CEQA document with potential project effects on those resources. Additionally, state or other California public agencies may contribute to and rely on information prepared as part of the environmental compliance process, including the certified CEQA document and supporting materials.

1.5.3.1 State Water Resources Control Board

As previously discussed in this chapter, the SWRCB is a responsible agency under CEQA that would be undertaking a discretionary action regarding the issuance or denial of a water quality certification under Section 401 of the CWA. As part of the WQC process, the SWRCB is responsible for reviewing projects to ensure compliance with relevant water quality control plans, in this case the SWRCB's Bay-Delta Plan and the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) (CVRWQCB 2019). For additional details on the WQC process, see Section 1.2.3 above.

1.5.3.2 California Department of Fish and Wildlife

CDFW is both a responsible agency and a trustee agency under CEQA (CEQA Guidelines §§ 15381 and 15386(a)). CDFW has discretionary authorities under various sections of the California Fish and Game Code and has trustee authorities with regard to the fish and wildlife of the state, to designated rare or endangered native plants, and to game refuges, ecological reserves, and other areas administered by the department.

1.5.3.2.1 California Fish and Game Code Section 2081(b)

CDFW administers and enforces CESA, which prohibits the import, export, take, possession, purchase, or sale of species listed by the state as endangered, threatened, or in specific cases,

candidate species (Fish & Game Code §§ 2080, 2081.1). "*Take"* under CESA is defined as any action or attempt "*to hunt, pursue, catch, capture, or kill*" (Fish & Game Code § 86). As provided by Section 2081(b) of the Fish & Game Code, CDFW may authorize take that is otherwise prohibited by Section 2080 with an ITP. CESA allows CDFW to issue an ITP for a state-listed threatened and endangered species only if specific criteria are met (14 Cal. Code Regs. § 783.4 (a) and (b)). Incidental take of endangered, threatened, or candidate species may be authorized if an applicant demonstrates, among other things, that the effects of the proposed take will be minimized and fully mitigated (Fish & Game Code § 2081(b)(2)).

1.5.3.2.2 California Fish and Game Code Section 1600 et seq.

Section 1602 of the Fish & Game Code requires any person, state, or local government agency to provide advance written notification to CDFW prior to initiating any activity that would do the following.

- Substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake.
- Deposit or dispose of debris, waste, or other material into any river, stream, or lake.

Certain actions that would be implemented under the new YRDP FERC license may trigger the need to provide notice under Section 1602. CDFW would review notifications of actions to determine if the aspects of the project triggering notification would substantially adversely affect existing fish and wildlife resources that are directly dependent on a lake, river, or stream. If CDFW determines that the project action may substantially adversely affect an existing fish and wildlife resource, it could require, as part of a Lake and Streambed Alteration Agreement, reasonable measures if necessary to protect the fish and wildlife resource (Fish and Game Code §1603(a)).

1.6 Organization of the YRDP and Narrows Project Joint DEIR

This DEIR begins with several introductory chapters that provide important foundations for analyses. The early chapters provide detail about the history and purpose of the YRDP and the Narrows Project, the intended uses of this document (Chapter 1 – Introduction), a description of the Proposed Projects (Chapter 2 - Project Description), and a description of the alternatives considered (Chapter 3 - Alternatives). Chapter 4 describes the format and approach of the CEQA analysis. After these introductory chapters are 19 chapters that discuss specific environmental resources and the potential impacts of the Proposed Projects on these areas. These chapters are where most of the CEQA analysis occurs.

After the resource chapters, this DEIR concludes with a chapter that discusses the additional issues required to be considered in an EIR by CEQA. These issues include growth-inducing impacts, significant environmental effects that cannot be avoided, and significant irreversible environmental changes that would occur should the Proposed Projects be implemented (CEQA Guidelines Section 15126). This DEIR also includes a discussion of climate change and its impacts on the Proposed Projects. The discussion of climate change in Chapter 25, Other CEQA Considerations, is limited to impacts of climate change on the Proposed Projects and alternatives, but not the projects' GHG emissions and potential impacts on climate change, which are addressed

in Chapter 15, Air Quality and Greenhouse Gas Emissions. Information about climate change and how it may affect YRDP and Narrows Project operations in the future is presented for informational purposes only in the interest of disclosure. The climate change discussion does not apply CEQA thresholds of significance, nor does it make resource-specific impact conclusions or propose mitigation. This DEIR also contains a suite of appendices that provide additional details about the YRDP and the Narrows Project, as well as additional information and supporting documentation related to the analytical foundations and applicable resource chapters.

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Yuba Water. *See* Yuba County Water Agency.

CHAPTER 2

PROJECT DESCRIPTION

The Proposed Projects analyzed in this DEIR are the continued O&M of the YRDP (FERC Project No. 2246) and the Narrows Project (FERC Project No. 1403) under new FERC licenses.

This chapter summarizes the existing facilities and power operations of both projects, and the changes to facilities and operations that would be associated with renewal of both licenses, and also summarizes the environmental measures (proposed by Yuba Water, by FERC Staff, and by other public agencies) that would be implemented under the new licenses. Descriptions of existing facilities and modifications and conditions associated with the new license for the YRDP are largely summarized or excerpted from the 2019 FERC FEIS, Section 2.0, Proposed Action and Alternatives, and from Yuba Water's AFLA (errata filed July 21, September 15, and November 1, 2017) for the YRDP filed with FERC on June 5, 2017 (errata filed July 21, September 15, and November 1, 2017).[1] Descriptions of existing facilities and modifications and conditions associated with the new license for the Narrows Project are largely summarized or excerpted from the Yuba Water's FLA license application filed with FERC on November 14, 2023.[2]

The new FERC license for the YRDP would consist of: (1) modifications to existing YRDP facilities (see Section 2.2.1); (2) adjustment of the YRDP FERC Project Boundary (see Section 2.3.1); (3) protection, mitigation, and enhancement (PM&E) measures proposed by Yuba Water; (4) FERC Staff recommended modifications of Yuba Water's proposal and additional measures; and (5) all mandatory terms and conditions. Mandatory terms and conditions are those required by the USFS and the U.S. Department of the Interior (Interior) under the FPA. Additionally, the SWRCB[3] can require conditions under the CWA (USFS 2018). The YRDP license also would include reasonable and prudent measures required in any biological opinion for the Project under the ESA. Together, these components will comprise the new obligations and Project modifications expected to be implemented under a new FERC license for the YRDP.[4]

The new FERC license for the Narrows Project would consist of: (1) project-related changes proposed by Yuba Water (see Section 2.2.3); (2) PM&E measures proposed by Yuba Water; (3) FERC Staff recommended modifications of Yuba Water's proposal and additional measures (if

[1] Available in FERC's eLibrary at Accession No. 20170605-5050 (Filed on June 5, 2017).

[2] Available in FERC's eLibrary at Accession No. 20231114-5136 (Filed on November 14, 2023).

[3] The SWRCB has not yet acted on Yuba Water's request for a CWA Section 401(a)(1) WQC, which was submitted to the SWRCB on December 30, 2024 and filed with FERC (Available in FERC's eLibrary at Accession No. 20241230-5127 (Filed on December 30, 2024)).

[4] For the YRDP FERC relicensing process, several exhibits were developed by Yuba Water and filed with FERC as part of Yuba Water's 2017 AFLA. YRDP-related exhibits that are relevant to characterizing the CEQA Baseline (Existing Condition) and the YRDP Proposed Project are attached to this DEIR in **Appendix 2A**, and include: (1) AFLA Exhibit A – Project Description; (2) AFLA Exhibit B – Project Operations and Resource Utilization; (3) AFLA Exhibit C – Construction History and Proposed Construction Schedule; (4) AFLA Exhibit D – Statement of Costs and Financing; and (5) AFLA Exhibit G – Project Maps. All exhibits related to the YRDP AFLA are available in FERC's eLibrary at Accession No. 20170605-5050 (Filed on June 6, 2017).

any); and (4) mandatory terms and conditions (if any).[5] Together, these components will comprise the new obligations and Project modifications expected to be implemented under a new FERC license for the Narrows Project.[6]

2.1 Project Purpose and Objectives

CEQA requires that an EIR contain a "*statement of the objectives sought by the proposed project*." "[A] *clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits*" (CEQA Guidelines § 15124(b)).

When FERC issues new licenses for the YRDP and the Narrows Project under the FPA, Yuba Water will be required to decide whether or not to accept each one of the new licenses.[7] The project objectives provide the reasons that Yuba Water is seeking renewal of FERC licenses for the YRDP and the Narrows Project, respectively.

2.1.1 YRDP

The project objectives for the YRDP Relicensing are the following:

1. Obtain a new FERC license for the YRDP under which Yuba Water can generate sufficient revenues to support its continued use, operation, and maintenance of the YRDP facilities to advance its missions established by the Legislature in the Yuba County Water Agency Act (Agency Act).[8]
2. Obtain a new FERC license for the YRDP under which Yuba Water can generate sufficient revenues to maintain and operate Yuba Water's existing flood control facilities, and implement new flood risk reduction projects in Yuba County.
3. Obtain a FERC license for the YRDP under which Yuba Water can operate the YRDP to provide adequate and reliable agricultural surface water supplies within Yuba County and to maintain sustainable conditions in the North Yuba and South Yuba groundwater basins

[5] To date, no FERC-recommended modifications or additional measures to Yuba Water's proposal for the Narrows Project have been identified, and no FPA Section 4(e) Conditions have been recommended by the USFS or others. The SWRCB has not yet acted on Yuba Water's request for a WQC that was submitted to the SWRCB on December 30, 2024 and filed with FERC (Available in FERC's eLibrary at Accession No. 20241230-5125 (Filed on December 30, 2024)). Yuba Water will evaluate whether any measures or conditions included in the license require further environmental review as required by CEQA before considering accepting the license.

[6] Several exhibits were developed by Yuba Water for the Narrows Project FERC relicensing process and filed with FERC as part of Yuba Water's 2023 FLA. Narrows-related exhibits that are relevant to characterizing the CEQA Baseline (Existing Condition) and the Narrows Proposed Project are presented in **Appendix 2F**, and include: (1) Narrows Exhibit A – Project Description; (2) Narrows Exhibit B – Project Operations and Resource Utilization; (3) Narrows Exhibit C – Construction History and Proposed Construction Schedule; (4) Narrows Exhibit D – Statement of Costs and Financing; and (5) Narrows Exhibit G – Project Maps. All exhibits related to the Narrows Project FLA are available in FERC's eLibrary at Accession No. 20231114-5136 (Filed on November 14, 2023).

[7] A licensee's failure to file a request for rehearing of FERC's license order within 30 days constitutes the licensee's acceptance of the new license.

[8] Section 4.1 of the Agency Act (West's California Water Code App. § 84-4.1) authorizes Yuba Water to develop hydroelectric power in connection with Yuba Water's projects. For additional information regarding Yuba Water, refer to Yuba Water's website at https://www.yubawater.org/.

for all beneficial uses, consistent with the Sustainable Groundwater Management Act (Water Code sections 10720-10738).

4. Operate the YRDP to provide streamflow and water temperature benefits for sensitive fish species in the lower Yuba River, downstream of the YRDP's facilities, consistent with the benefits the YRDP has provided for those beneficial uses.
5. Consistent with FERC's March 2021 Additional Information Request (AIR), implement any additional protections for ESA-listed fish species in the lower Yuba River in a way that both:
    (a) improves Yuba River water temperatures for those species and their designated critical habitat; and
    (b) equitably allocates protective activities such that no entity is disproportionately burdened with a responsibility to mitigate impacts on those species caused by other entities.
6. Continue to generate long-term, predictable revenue for Yuba Water's programs to support Yuba County's disadvantaged communities consistent with Yuba Water's mission.
7. Continue to support California's power requirements by providing carbon-free hydropower generation to:
    (a) meet resource diversity and capacity needs within the Sierra Local Capacity Area consistent with the Agency Act, CEC regulations and CAISO energy markets.
    (b) To respond to requests from CAISO to provide additional power during power emergencies (e.g., heat-related shortages) to support statewide electrical grid systems.
8. Continue to generate long-term, predictable revenue for Yuba Water's fisheries and aquatic habitat enhancement projects on the lower Yuba River.
9. Obtain stability and predictability in long-term YRDP operations to generate sufficient funds to allow Yuba Water to comply with the YRDP license conditions, and to justify substantial upfront investments by Yuba Water for modifications to its generation facilities, the addition of the flood control outlet, and implementing PM&Es, including constructing and refurbishing recreation facilities and access roads thereto during the next license term.
10. Consistent with state policies favoring water transfers stated in Water Code sections 109 and 475, continue to support statewide water supply reliability through continued Lower Yuba River Accord transfers to contractors of the CVP and the SWP, and potentially others, under the Lower Yuba River Accord Water Purchase Agreement.

As described in FERC's (2019) FEIS, FERC's issuance of a new license for the YRDP would allow Yuba Water to continue to use water available to Yuba Water to generate electricity at the YRDP facilities for the term of a new FERC license, consistent with the above objectives.

2.1.2 Narrows Project

The project objectives for the Narrows Project Relicensing include the following:

1. Continue to support Yuba Water's coordinated operations of the Narrows Project with the YRDP to advance and implement Yuba Water's core flood-control and water-supply missions established by the Legislature in the Agency Act.
2. Obtain a new FERC license for the Narrows Project to generate revenues to continue to fund operation and maintenance of the Narrows Project facilities as part of Yuba Water's flood-control and water-supply missions under the Agency Act.
3. Continue to generate long-term, predictable revenue for Yuba Water's programs to support Yuba County's disadvantaged communities.
4. Continue to generate long-term, predictable revenue for Yuba Water's fisheries and aquatic habitat enhancement projects on the lower Yuba River.
5. Continue to support California's power requirements by providing renewable hydropower generation to meet resource diversity and capacity needs consistent with the Agency Act, CEC regulations and CAISO energy markets.
6. Obtain stability and predictability in long-term Narrows Project operations to generate funds to allow Yuba Water to comply with the Narrows Project license conditions.
7. Continue to provide stability and reliability in long-term YRDP and Narrows Project coordinated operations by obtaining a new FERC license for the Narrows Project that will run concurrently with the term of a new FERC license for the YRDP.

FERC's issuance of a new license for the Narrows Project would allow Yuba Water to continue to use public waters to generate electricity at the Narrows Project facilities for the term of the new FERC license, making electrical power from a renewable resource available for transmission to its customers, consistent with the above objectives.

2.2 Project Location

The YRDP and Narrows Project are both located in the Yuba River Watershed, which has a drainage area of approximately 1,108 square miles (sq mi) at Englebright Dam[9] and 1,339 sq mi at its confluence with the Feather River. Figure 2.2-1 shows the general regional location of the Yuba River Watershed.

[9] The Harry L. Englebright Dam (Englebright Dam) and Reservoir, a federally owned facility administered and operated by the USACE, is located upstream of the YRDP's and Narrows powerhouse facilities. Both the YRDP and the Narrows Project take advantage of water received from USACE's Englebright Reservoir. Englebright Dam, which is about 260 ft high and forms Englebright Reservoir, was constructed by the California Debris Commission in 1941. Englebright Dam and the surrounding land are owned by the United States. When the California Debris Commission was decommissioned in 1986, administration of Englebright Dam and Reservoir passed to the USACE.

2.2.1 YRDP

The YRDP is located in Yuba, Sierra and Nevada counties, California, on the main stems of the Yuba River, the North Yuba River and the Middle Yuba River, and on Oregon Creek, a tributary to the Middle Yuba River. The Yuba River is a tributary to the Feather River and is part of the Sacramento River Basin, which drains into San Francisco Bay. The YRDP currently occupies 4,432.8 acres (ac) of Federal land, consisting of 4,416.7 ac within the Tahoe National Forest (TNF) and the Plumas National Forest (PNF) associated with the New Colgate Development, which is administered by the USFS, and 16.1 ac associated with the Narrows 2 Development, which is administered by USACE. Figure 2.2-2 shows the Project Vicinity,[10] including the existing FERC Project Boundary for the YRDP (dashed black line). The YRDP area ranges in elevation from 290 feet (ft) to 2,030 ft above mean sea level (msl).

[10] For the purposes of this document, "Project Vicinity" refers to the area surrounding the proposed YRDP Relicensing Project on the order of United States Geological Survey (USGS) 1:24,000 quadrangles.

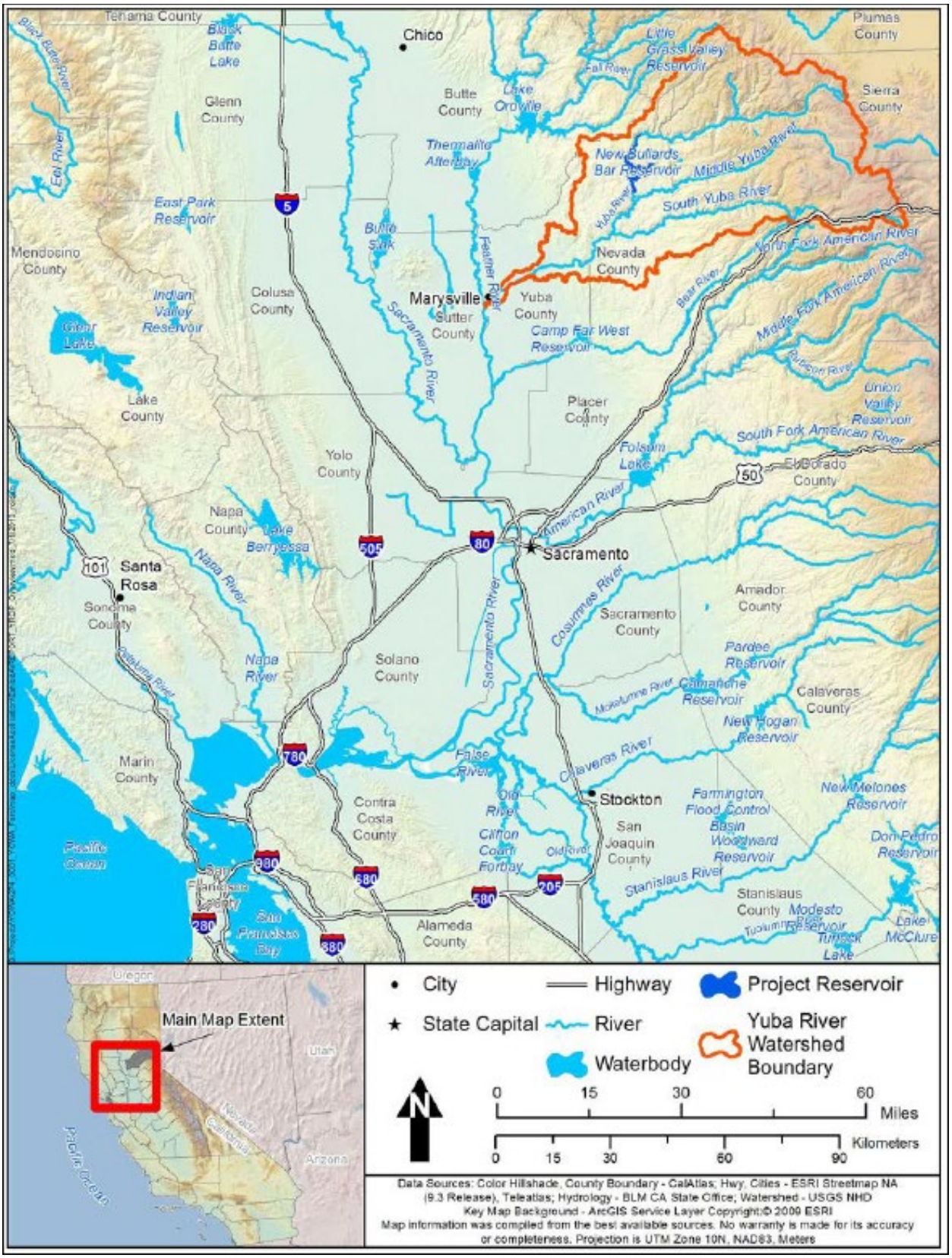

Figure 2.2-1. Yuba River Watershed in relation to the Feather River and other tributaries of the Sacramento River.

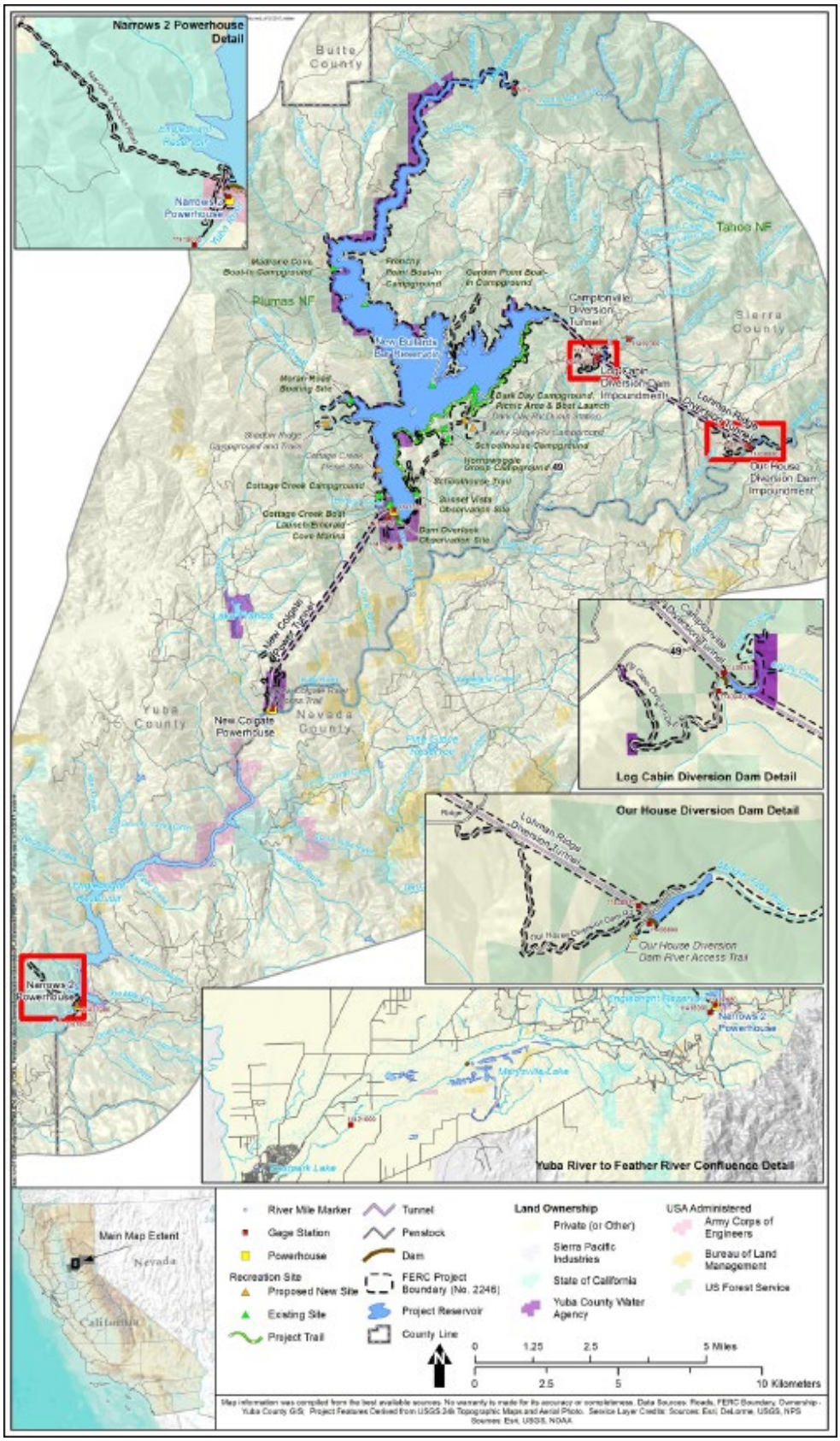

Figure 2.2-2. Yuba Water's YRDP and Project Vicinity.

2.2.2 Narrows Project

The Narrows Project is located along the lower Yuba River in Nevada County, California, approximately 23 miles northeast of the City of Marysville. The Narrows Project works are located on the south bank of the lower Yuba River extending approximately 0.2-mile downstream of USACE's Englebright Dam (Figure 2.2-3). The FERC Project Boundary includes a total of 2.92-ac, including 2.37 ac of Yuba Water-owned lands, which include all lands on which above-ground Project facilities and features are located, and 0.55-ac of federal lands, which are above the Narrows Tunnel (i.e., no surface facilities on federal lands) and are administered by the USACE (YCWA 2021). The Narrows Project area ranges in elevation from 300 ft to 849 ft above msl.

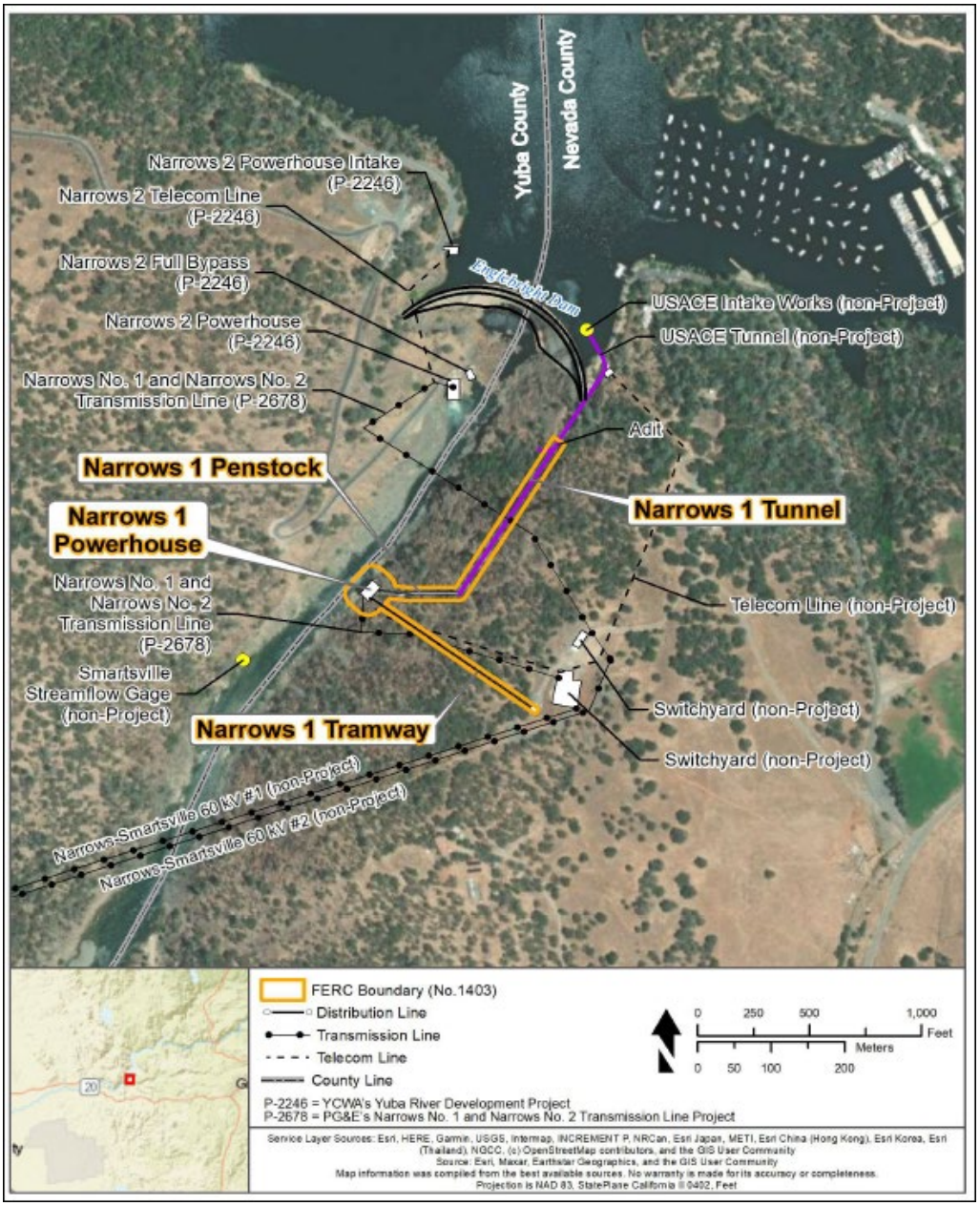

Figure 2.2-3. Yuba Water's Narrows Project and nearby non-YRDP facilities and features.

From the Narrows 1 Powerhouse, the lower Yuba River flows approximately 24.1 miles to its confluence with the Feather River, which is part of the Sacramento River Basin and drains into the Sacramento River and subsequently into San Francisco Bay.

2.3 Existing Projects

For both the YRDP and the Narrows Project, provided below is a description of: (1) existing facilities; (2) existing FERC Project Boundary; (3) current operations; (4) maintenance activities; (5) existing recreation facilities; and (6) conditions in the existing FERC license and other agreements and contracts that affect existing operations.

2.3.1 Existing YRDP

2.3.1.1 Existing YRDP Facilities

The existing YRDP includes three developments[11] – New Colgate, New Bullards Bar Minimum Flow, and Narrows 2 – each of which is described below. Existing YRDP facilities are shown in Figure 2.2-2. From 2008 through 2024, the YRDP generated an average of 1,188,624 MWh of power annually. The YRDP's total installed capacity under the existing license is 361.9 MW and Yuba Water's calculated dependable capacity is 247,331 kilowatts (kW). Table 2.3-1 summarizes key information for YRDP powerhouses.

Table 2.3-1. Key information regarding YRDP powerhouses.

Powerhouse	Unit	Turbine Type	Rated Head (ft)	Rated Hydraulic Capacity (cfs)		Generation Capacity (kW)		Average Annual Energy (MWh/yr)
				Minimum	Maximum	Nameplate Rating[1]	Dependable[2]	
New Colgate	1	Pelton	1,306	0	1,715	157,500	247,261	1,082,762
New Colgate	2	Pelton	1,306	0	1,715	157,500		
New Bullards Minimum Flow	1	Pelton	561	0	5	150	0	984
Narrows 2	1	Francis	236	600	3,400	46,750	70	161,441
Total	**4**	**--**	**--**	**--**	**--**	**361,900**	**247,331**	**1,245,187**

Notes: cfs = cubic feet per second; kW = kilowatt; MWh/yr = megawatt-hours/year

[1] From Table 5.2-6 in Exhibit D of Yuba Water's 2017 AFLA (see Appendix 2A-4).

[2] From Table 5.2-7 in Exhibit D (i.e., historical dependable capacity) of Yuba Water's 2017 AFLA (see Appendix 2A-4).

The existing YRDP can store approximately 966,473 acre-feet (ac-ft) of water in gross storage. Table 2.3-2 summarizes key information for YRDP reservoirs.

[11] A "hydropower development" refers to the process of building and constructing a facility that harnesses the power of flowing water to generate electricity, essentially creating a hydropower plant at a specific location, which typically involves building a dam or diversion structure to control the water flow and drive turbines to produce electricity. "Developments" are project facilities that are situated immediately upstream of a powerhouse, which are not part of another development. "Developments" may include the part of a project comprising an impoundment and its associated dams, forebays, water conveyance facilities, power plants, and other appurtenant facilities. A project may comprise one or more developments (18 C.F.R. 12.3(b)(7)).

Table 2.3-2. Key information regarding YRDP reservoirs and impoundments.

Project Reservoir	NMWSE[1] (ft)	Gross Storage[2] (ac-ft)	Usable Storage (ac-ft)	Surface Area[2] (ac)	Maximum Depth[2] (ft)	Shoreline Length[2] (mile)	Drainage Area[3] sq mi)
Our House Diversion Dam Impoundment	2,030	280	None	14	65	0.7	144.8
Log Cabin Diversion Dam Impoundment	1,970	90	None	5	40	0.4	29.1
New Bullards Bar Reservoir	1,956	966,103	961,103	4,790	636	71.9	466.6
Total	**--**	**966,473**	**961,103**	**4,809**	**--**	**--**	**--**

[1] NMWSE = Normal Maximum Water Surface Elevation
[2] Storage between NMWSE and the invert of the 72-in. hollow jet low level outlet.
[3] At the dam, and drainage areas are not additive.

2.3.1.1.1 New Colgate Development

The New Colgate Development is located on the main stems of the North Yuba River, Middle Yuba River, Yuba River, and Oregon Creek, a tributary to the Middle Yuba River. The development includes two diversion dams (Our House and Log Cabin), two diversion tunnels (Lohman Ridge and Camptonville), one storage reservoir (New Bullards Bar), one power tunnel and penstock (New Colgate) and one powerhouse (New Colgate). Representative photographs of the non-recreation facilities and features are provided in Appendix 2A, Exhibit A**.** Additionally, Figure 2.0-2 in Exhibit A to Appendix 2A shows all of these YRDP features on a map.

The New Colgate Development consists of the following features:

1. Our House Diversion Dam is a 130-ft radius, double curvature, concrete arch dam located in Sierra County on the Middle Yuba River 12.6 miles upstream of its confluence with the North Yuba River. The dam is 70 ft high with a crest length of 368 ft and a crest elevation of 2,030 ft, and has a drainage area of 144.8 sq mi. The dam has a spillway, a fish release outlet valve used for releasing minimum flow requirements in the existing FERC license, and a low-level (5-ft diameter) outlet valve (Figure 2.3-1).[12] The spillway, with an invert elevation of 2,030 ft, is ungated and has a maximum capacity of 60,000 cubic feet per second (cfs). The fish release outlet valve has an invert elevation of 1,990 ft, and an engineer's estimated maximum capacity of 59 cfs when the pool is at the invert (2,015 ft) of the Lohman Ridge Diversion Tunnel. The fish release outlet is controlled by a hand-operated 24-inch (in.) valve on the downstream end of the outlet. The low-level outlet has an invert elevation of 1,987 ft, and an engineer's estimated maximum capacity of 463 cfs when the pool is at the invert of the Lohman Ridge

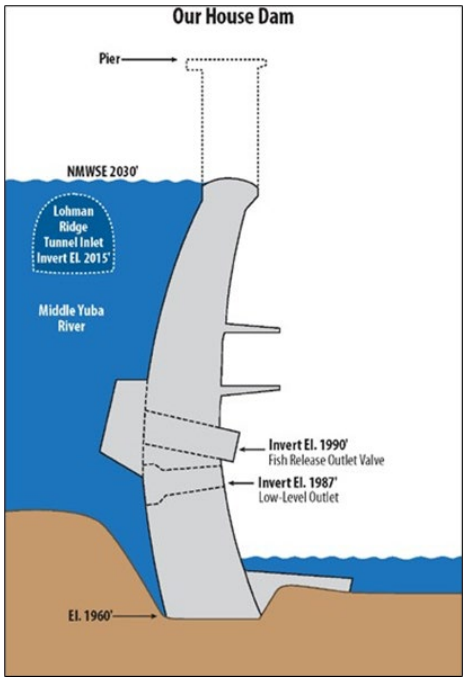

Figure 2.3-1. Our House Diversion Dam features.

[12] For the purpose of Yuba Water's FERC application, the slide gate that controls the Our House Diversion Dam low-level outlet is referred to as a "valve."

Diversion Tunnel. The low-level outlet is controlled by a slide gate, which is operated by a two-person portable gasoline powered engine, on the upstream face of the dam.

2. Our House Diversion Dam Impoundment, a 280 ac-ft impoundment formed by Our House Diversion Dam.

3. Lohman Ridge Diversion Tunnel, a 12.5-ft high by 12.5-ft wide tunnel that conveys a maximum flow of 860 cfs through its 19,410-ft (90% unlined and 10% lined) length from the Middle Yuba River to Oregon Creek. The invert of the tunnel intake is at elevation 2,015 ft, which is 15 ft below the Normal Maximum Water Surface Elevation (NMWSE) for Our House Dam (i.e., water can only be diverted through the tunnel when the impoundment's water surface elevation (WSE) is 2,015 ft or greater).

4. Log Cabin Diversion Dam, is a 105-ft radius, concrete arch dam located in Yuba County on Oregon Creek 4.3 miles upstream of the confluence with the Middle Yuba River. The dam is 42.5 ft high with a crest length of 300 ft, a crest elevation of 1,970 ft, and a drainage area of 29.1 sq mi. The dam has a spillway, a fish release outlet valve used for releasing minimum flow requirements in the existing FERC license, and a low-level (5-ft diameter) outlet valve (Figure 2.3-2).[13] The spillway, with an invert elevation of 1,970 ft, is ungated and has a maximum capacity of 12,000 cfs. The fish release outlet valve has an invert elevation of 1,947 ft and an engineer's estimated maximum capacity of 18 cfs when the pool is at the invert (1,952 ft) of the Camptonville Diversion Tunnel. The outlet is controlled by a hand-operated valve on the downstream end of the outlet. The low-level outlet has an invert elevation of 1,935 ft, and an engineer's estimated maximum capacity of 348 cfs when the pool is at the invert of the Camptonville Diversion Tunnel. The low-level outlet is controlled by a slide gate, which is operated by a two-person portable gasoline powered engine, on the upstream face of the dam.

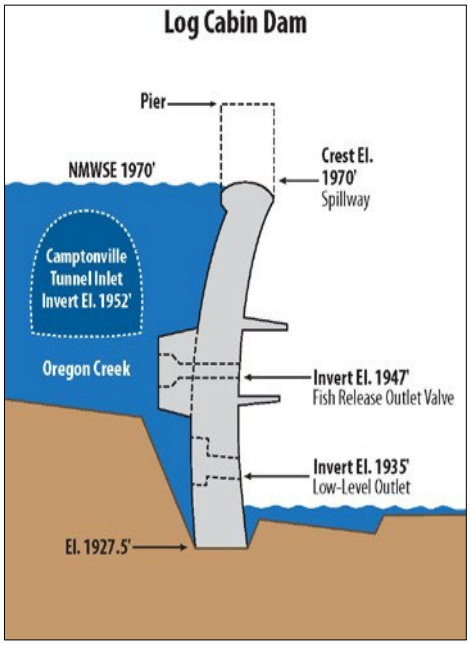

Figure 2.3-2. Log Cabin Diversion Dam features.

5. Log Cabin Diversion Dam Impoundment, a 90 ac-ft impoundment formed by Log Cabin Diversion Dam.

6. Camptonville Diversion Tunnel, a 6,107-ft long tunnel that has the capacity to convey 1,100 cfs of water from Oregon Creek to New Bullards Bar Reservoir on the North Yuba River. The first 4,275 ft of the conduit is an unlined, horseshoe-shaped tunnel 14.5 ft wide by 14.5 ft high, which (for the last 1,832 ft) becomes a lined, horseshoe-shaped tunnel 11.7 ft wide by 13 ft high. The tunnel invert elevation is 1,952 ft, which is 18 ft below the

[13] For the purpose of Yuba Water's FERC application, the slide gate that controls the Log Cabin Diversion Dam low-level (5-ft diameter) outlet is referred to as a "valve."

NMWSE for Log Cabin Diversion Dam (i.e., water can only be diverted through the tunnel when the impoundment's WSE is greater than 1,952 ft).

7. New Bullards Bar Dam, a 1,110-ft radius, double curvature, concrete arch dam located on the North Yuba River about 2.4 miles upstream of its confluence with the Middle Yuba River. The dam is 645 ft high with a maximum elevation of 1,965 ft. The dam includes one low-level outlet – a 72-in. Hollow Jet Valve (invert elevation 1,444.5 ft) with a maximum design capacity of about 3,500 cfs at full reservoir pool, and an actual capacity of 1,250 cfs (i.e., actual release capacity is limited to 1,250 cfs because of valve vibrations at higher release rates). The dam includes an overflow-type spillway with a width of 106 ft and a crest elevation of 1,902 ft. Control gates on the spillway consist of three Tainter Gates measuring 30 ft wide and 54 ft tall and hoisted by 10 horsepower drum hoists. The maximum design capacity of the spillway is 160,000 cfs. Figure 2.3-3 provides a longitudinal schematic of New Bullards Bar Dam.
8. New Bullards Bar Reservoir, a storage reservoir on the North Yuba River formed by New Bullards Bar Dam. At NMWSE (1,956 ft), New Bullards Bar Reservoir extends about 15.3 river miles upstream on the North Yuba River, has an estimated gross storage capacity of 966,103 ac-ft, a surface area of 4,790 ac, a shoreline of about 71.9 miles, and a drainage area of 488.6 sq mi.
9. New Colgate Power Tunnel Intake, a structure on the upstream face of New Bullards Bar Dam composed of a curtain wall, trash rack and two intakes, one with an invert elevation of 1,808 ft and the other with an invert elevation of 1,627.5 ft. The upper intake is not used per the direction of CDFW (Figure 2.3-3).
10. New Colgate Power Tunnel and Penstock, a 5.2-mile-long conveyance facility composed of four different types of conveyance structures: an unlined horseshoe-shaped tunnel 26 ft square; a lined horseshoe-shaped tunnel 20 ft wide and 14.5 ft high; a lined circular tunnel 14 ft in diameter; and 2,809 ft of steel penstock with a diameter ranging from 9 ft to 14.5 ft. The tunnel and penstock have a maximum flow capacity of 3,500 cfs (Figure 2.3-3).

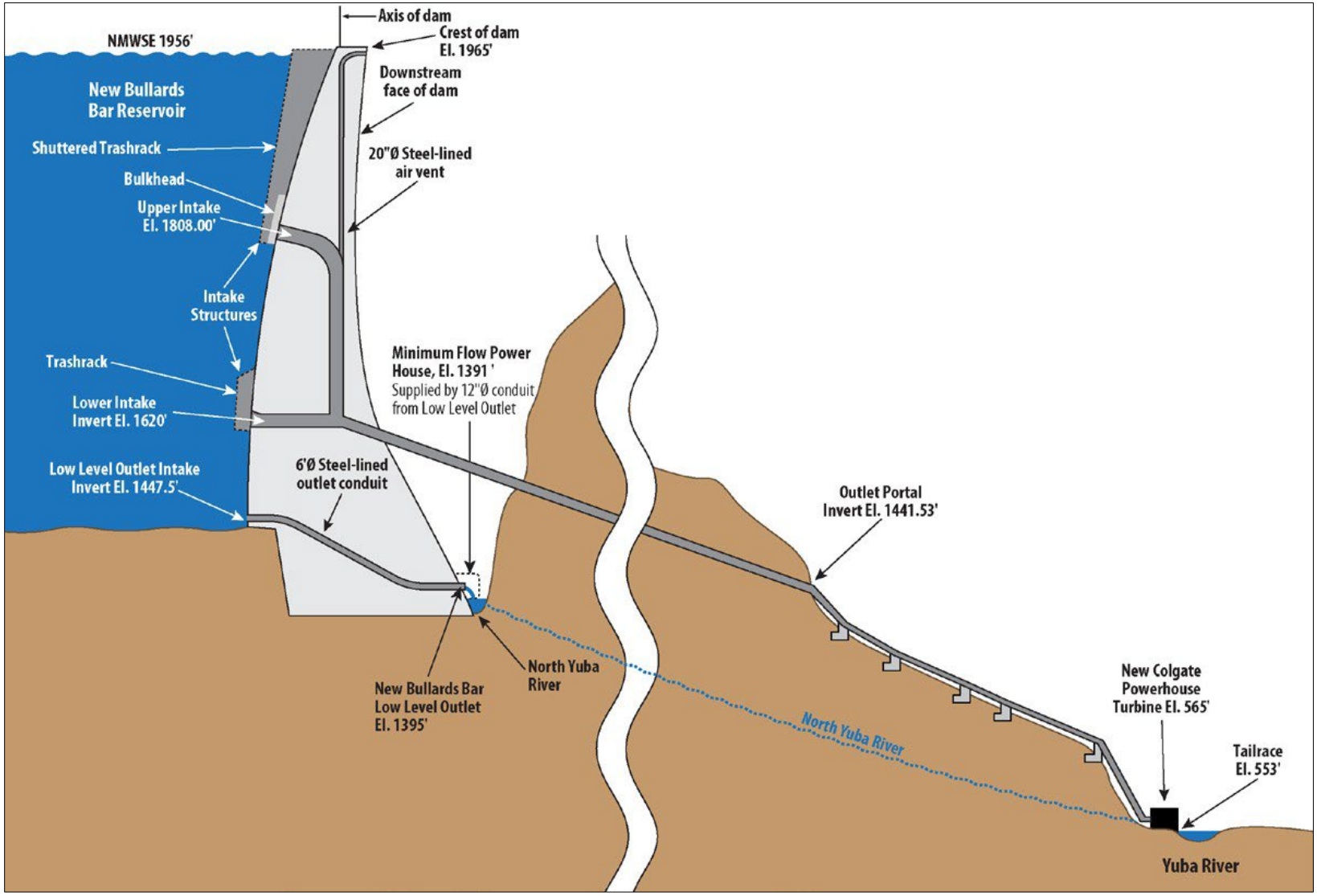

Figure 2.3-3. Longitudinal schematic of New Bullards Bar Dam on the North Yuba River and New Colgate Power Tunnel and Powerhouse on the Yuba River.

11. New Colgate Powerhouse and Switchyard, a mostly underground, steel reinforced, concrete powerhouse located adjacent to the Yuba River. The powerhouse contains two vertical-shaft Voith Siemens Pelton type turbines with a total actual measured capacity of 340 MW under a design head of 1,306 ft and a measured flow of 3,430 cfs. The New Colgate Switchyard is located adjacent to New Colgate Powerhouse (Figure 2.3-3).
12. New Bullards Bar Reservoir Recreation Facilities, 16 recreation facilities, which are: (1) Hornswoggle Group Campground; (2) Schoolhouse Campground; (3) Dark Day Campground; (4) Cottage Creek Campground; (5) Garden Point Boat-in Campground; (6) Madrone Cove Boat-in Campground; (7) Frenchy Point Boat-in Campground; (8) Dark Day Picnic Area; (9) Sunset Vista Point; Dam Overlook; (10) Moran Road Day Use Area; (11) Cottage Creek Boat Launch; (12) Dark Day Boat Launch; (13) Schoolhouse Trail; (14) Bullards Bar Trail; and (15) floating comfort stations. All of the recreation facilities are located on National Forest System (NFS) land, with the exception of the Dam Overlook, Cottage Creek Boat Launch and small portions of the Bullards Bar Trail, which are located on land owned by Yuba Water. All of the developed recreation facilities are located within the existing FERC Project Boundary, except for a few short segments of the Bullards Bar Trail to the east of the Dark Day Boat Launch.
13. Streamflow Gages, two streamflow gages, one each located downstream of Our House Diversion Dam (USGS Gage 11408880) and downstream of Log Cabin Diversion Dam (USGS Gage 11409400).
14. Roads, 15 existing Primary Project Road segments for a total length of 4.61 miles, and 12 recreation-related road segments for a total length of 3.84 miles (Appendix 2A, Exhibit A).

2.3.1.1.2 New Bullards Bar Minimum Flow Development

The New Bullards Bar Minimum Flow Development consists of the following facilities and features:

1. New Bullards Minimum Flow Powerhouse Penstock, a 70-ft long, 12-in. diameter steel penstock with a maximum flow capacity of 6 cfs (Figure 2.3-3). The penstock bifurcates off the New Bullards Bar Dam low-level outlet upstream of the 72-in. Hollow Jet Valve.
2. New Bullards Minimum Flow Powerhouse, a single Pelton turbine with a capacity of 150 kW at a flow of 5 cfs (Figure 2.3-3).
3. New Bullards Minimum Flow Transformer, a transformer located adjacent to the New Bullards Minimum Flow Powerhouse.
4. Streamflow Gages, one streamflow gages, located downstream of New Bullards Bar Dam (USGS Gage 11413517).

The New Bullards Bar Minimum Flow Development does not include any recreation facilities, Primary Project Roads, or Recreation Roads.

2.3.1.1.3 Narrows 2 Development

The YRDP Narrows 2 Development consists of the following features:

1. Narrows 2 Powerhouse Penstock, a tunnel that is 20 ft in diameter and concrete lined in the upper 376 ft, and 14 ft in diameter and steel lined for the final 371.5 ft. The penstock has a maximum flow capacity of 3,400 cfs. The penstock bifurcates above the spiral case. One branch conveys water to the Narrows 2 Full Bypass, which is described below. The other branch conveys water to the Narrows 2 Powerhouse and Partial Bypass, which are described below. Figure 2.3-4 provides a longitudinal schematic of the Narrows 2 Powerhouse Penstock and Powerhouse.

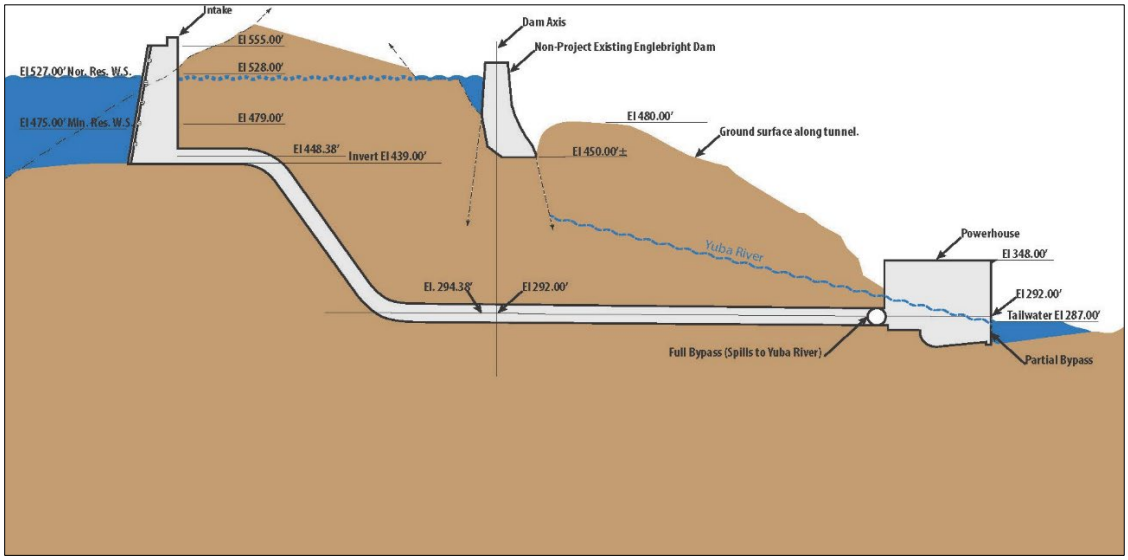

Figure 2.3-4. Longitudinal schematic of YRDP Narrows 2 Powerhouse Penstock and Powerhouse.

1. Narrows 2 Full Bypass (Full Bypass), a valve and penstock branch off the Narrows 2 Penstock, which can discharge[14] up to 3,000 cfs of water at full head into the Yuba River immediately upstream of the Narrows 2 Powerhouse through a 72-in. diameter fixed-cone valve in a concrete structure. The full bypass was installed in 2008 to maintain minimum flows during times of full shutdown of the Narrows 2 Powerhouse and is also used during flow transitions between the Narrows 2 Powerhouse and the Narrows Project (FERC No. 1403) Narrows 1 Powerhouse (Figure 2.3-4).
2. Narrows 2 Powerhouse and Switchyard, an indoor powerhouse located about 200 ft downstream of Englebright Dam. The powerhouse consists of one vertical axis Francis turbine with a capacity of 55 MW at a head of 236 ft and flow of 3,400 cfs. Releases from the powerhouse draft tube are subsurface. The Narrows 2 Powerhouse Switchyard is located adjacent to the powerhouse.
3. Narrows 2 Partial Bypass (Partial Bypass), includes a pipe off the Narrows 2 Powerhouse turbine scroll case, which can discharge up to 650 cfs of water at full head into the Yuba River through a 36-in. valve located on the downstream face of the powerhouse above the

[14] For the purpose of the FERC relicensing process and this DEIR, "discharge" means the estimated flow through a facility at a designated location in terms of cfs. A discharge may be measured or estimated, and may also be referred to as a "release."

draft tube outlet. The Partial Bypass was built as part of the original design when the Narrows 2 Powerhouse was constructed.

4. Streamflow Gages, none.[15]
5. Roads, four existing Primary Project Road segments for a total length of 2.27 miles.

The YRDP Narrows 2 Development does not include any recreation facilities or recreation roads.

2.3.1.2 Existing YRDP FERC Project Boundary

The FERC Project Boundary consists of all lands necessary for the safe O&M of the YRDP and other purposes, such as recreation, shoreline control, and protection of environmental resources. For the YRDP, the existing Project Boundary encompasses 7,815.2 ac of land in Yuba, Nevada and Sierra counties, California. The existing FERC Project Boundary (Figure 2.2-2) includes a zone of area that encloses all YRDP facilities and features. The width of the zone around a facility or feature varies depending on the type of YRDP facility or feature and the activities associated with it.

A total of 56.5 percent of the land (4,416.7 ac) within the FERC Project Boundary is NFS lands, and 0.2 percent (16.1 ac) is USACE lands. The state of California owns 0.3 percent of the land (20.1 ac). Yuba Water owns 40.3 percent of the land (3,149.3 ac). The remaining 2.7 percent of the land (213.0 ac) within the existing FERC Project Boundary is in private ownership. The existing FERC Project Boundary for the YRDP (dashed black line) is shown on Figure 2.2-2, and more detailed maps of the existing FERC Project Boundary for the YRDP are provided in **Appendix 2A-5**.

2.3.1.3 Existing YRDP Operations

One of Yuba Water's major considerations each year is anticipated water availability. Yuba Water begins estimating water availability each year in January and continually updates the estimate throughout the spring runoff period. When estimating available water supply, Yuba Water considers current reservoir storage and California Department of Water Resources (DWR) Bulletin 120 forecasts of unimpaired flow at the Smartsville Gage on the lower Yuba River and the Goodyears Bar Gage on the North Yuba River. Estimates of available water supply and other water needs are compared to estimates of required releases, consumptive demands within Yuba Water, and target levels for fall carryover storage in New Bullards Bar Reservoir.

Typically, Yuba Water operates New Bullards Bar Reservoir by capturing winter and spring runoff from rain and snowmelt. The North Yuba River inflow to New Bullards Bar Reservoir is augmented by diversions from the Middle Yuba River to Oregon Creek through the Lohman Ridge Tunnel, and by diversions from the Lohman Ridge Tunnel and Oregon Creek into the reservoir

[15] The YRDP Narrows 2 Development does not include any streamflow gages. Yuba Water uses two non-project gages to monitor compliance with streamflow requirements. These gages are: USGS Gage 11418000, *Yuba River Below Englebright Dam, Near Smartsville*, and USGS Gage 1142100, *Yuba River Near Marysville*. The Smartsville Gage is owned, operated, and maintained by PG&E. The Marysville Gage is owned by Yuba Water and operated by USGS.

through the Camptonville Tunnel.[16] Consequently, New Bullards Bar Reservoir normally reaches its peak storage at the end of the spring runoff season, and then is gradually drawn down until its lowest elevation in early to mid-winter. The reservoir does not undergo significant daily changes in elevation.

New Bullards Bar Reservoir has mandatory reserved flood storage space criteria from mid-September through the end of May that limit maximum authorized storage (see Section 2.1.5.1; see also 33 Code of Federal Regulations [C.F.R.] section 208.11(e)). The Our House and Log Cabin diversion dam impoundments have no appreciable storage, and Yuba Water operates them exclusively to divert water to New Bullards Bar Reservoir in the winter and spring during high flow periods.

During the spring of each year, Yuba Water determines the anticipated runoff into New Bullards Bar Reservoir, relying upon snow course measurements and forecasts of runoff provided by DWR. Yuba Water also makes estimates of water needs for local water deliveries and for releases to meet required instream flows for the current WY. Based on these forecasts, an end-of-September storage is estimated. If the forecasted end-of-September storage is higher than a pre-determined target used for Yuba Accord operations (650,000 ac-ft),[17] releases are increased above the required flows to draw reservoir storage down to the target level. The target storage is an operational measure used to drive releases in relatively wet years and supports water releases for out-of-basin transfers under the Yuba Accord.

In addition to the target storage, there is a minimum storage at the end-of-water year to provide carryover storage requirement for drought protection purposes. If forecasted end-of-September storage falls below an end-of-September carryover storage target of 440,000 ac-ft for the first year of a drought, or 400,000 ac-ft for subsequent years, agricultural deliveries may be reduced to ensure adequate water supply for the following year. Reservoir carryover storage is used to make up the difference between the available surface water supply provided by the current year's runoff and system demands (e.g., diversion demands, instream flow requirements, and system operational losses) under drought conditions. During wetter years, Yuba Water operates New Bullards Bar Reservoir to an end-of-September target storage level for the Yuba Accord of 650,000 ac-ft, as well as other target storage levels for various times in mid-winter and spring that are parts of power generation operations and flood control operations.

The New Bullards Bar Minimum Flow Powerhouse is operated as a "base load" facility, where flows are set at a constant rate to provide the required instream flows downstream of New Bullards Bar Dam. In contrast, the New Colgate Powerhouse is a highly versatile facility and is used for a combination of peaking and base generation. Depending upon energy demand, the New Colgate Powerhouse generation can be fluctuated in less than 10 minutes from a minimum of 2 MW with only one unit operating to maximum load of 340 MW with both units operating if both units are ramped up at the same time. This ability to rapidly fluctuate generation, along with substantial

[16] The average total inflows to New Bullards Bar Reservoir from the North Yuba River and diversions from the Middle Yuba River and Oregon Creek are about 1,200,000 ac-ft per year, and annual inflow has ranged from a low of 163,000 ac-ft in 1977 to a high of 2,800,000 ac-ft in 1982.

[17] An end-of-September storage of 650,000 ac-ft would ensure adequate storage to meet full irrigation demands and dry-year flow requirements for a 90 percent exceedance drought in the following year.

storage available in New Bullards Bar Reservoir and its central geographical location, makes the New Colgate Powerhouse important and unique to the Northern California power grid.

For most of the year, New Colgate Powerhouse is operated as a peaking facility, or to provide ancillary services such as spinning reserves or regulation. Under peaking operations, releases through the powerhouse are concentrated to hours of the day when power is most valuable or when power demand is higher, such as weekdays from mid-morning through early evening that largely correspond to warmer times of the day and peak workday and early evening hours. Under ancillary services operations, the generating station is ramped upwards or downwards quickly to respond to power system load changes on a near-real-time basis, and generating the station output and flows may vary substantially minute-to-minute. The New Colgate Powerhouse also often operates under a combined peaking/ancillary service protocol, with one unit operating in peaking mode and the other unit responding to ancillary service requirements. During some of the late 1990s and early 2000s, New Colgate Powerhouse operations were focused on weekday peak generation. More recently, power generation has shifted to a schedule driven by a balance of peak period generation and providing ancillary services to the region.

At many times, New Colgate Powerhouse provides a significant percentage of the required ancillary service for grid regulation, as dispatched by the CAISO, the entity responsible for maintaining grid reliability in California. Peaking operations dominate power generation operations at New Colgate Powerhouse. However, under high flow conditions, some or all of the available capacity is used for base load generation, generating inexpensive power while excess water must be moved through the system anyway.

2.3.1.3.1 Narrows 2 – Flow Transitions[18]

The existing YRDP FERC license requires Yuba Water to coordinate releases from the Project's Narrows 2 Powerhouse, Partial Bypass and Full Bypass and the Narrows Project in accordance with specified streamflow requirements.

Except for flow transitions, Yuba Water does not operate the Full or Partial bypasses when Narrows 2 Powerhouse is operating (i.e., water is passing through the turbine and generating electricity) and, except in very rare instances, does not operate both bypasses at the same time. The transition between Narrows 2 Powerhouse and the Full Bypass can be performed in response to an emergency when a forced outage occurs or during normal operations as part of shutdown of the powerhouse. Since installation of the Full Bypass in January 2007, use of the Partial Bypass has been significantly reduced.

Many factors contribute to how the YRDP and the Narrows Project are operated in tandem at any given time, including equipment outages, storm flows and reliability of continuous water supply conveyance. Discharge can occur from the Narrows 1 and Narrows 2 powerhouses based on:

1. Water demand;
2. Market conditions;

[18] For the purpose of this DEIR, a "transition" or "change-over" refers to decreasing or increasing the discharge from one facility in coordination with decreasing or increasing flows in another facility. A transition may include a shutdown of one facility.

3. Capacity and condition of the turbines, generators and bypasses;
4. Transmission line conditions; and
5. A desire to maintain Englebright Reservoir elevations within a limited range and Yuba River flow fluctuations for the protection of fisheries and other reasons.

There are many diverse combinations of conditions that influence these operations. Yuba Water currently operates these facilities with a fair amount of flexibility that enables the agency to rely on its experience and familiarity with the equipment, safety, and protection of environmental resources. However, Table 2.3-3 provides a rough summary of the typical historical flow ranges through the Narrows 2 Powerhouse, the Partial Bypass, the Full Bypass and the Narrows 1 Powerhouse.

Table 2.3-3. Typical distribution of flows under normal operations (i.e., excluding brief transition periods) among Narrows 2 Powerhouse (generation only), Partial Bypass, Full Bypass and Narrows 1 Powerhouse.

Range of Flow Releases to Yuba River (cfs)	Narrows 2 Powerhouse Release (generation)[1] (cfs)	Partial Bypass Release[1] (cfs)	Full Bypass Release[1] (cfs)	Narrows 1 Powerhouse Release[2] (cfs)
Up to 150	0	Up to 150	0	0
150 - 730	0	Typically not used	Typically not used	150 - 730
730 – 900	0	Up to 170	Typically not used	730
900 – 1,080	350	Typically not used	Used When Narrows 2 Powerhouse not available	550 - 730
1,080 - 4,130	350 - 3,400	Typically not used	Used When Narrows 2 Powerhouse not available	730
> 4,130	3,400	Typically not used	Used When Narrows 2 Powerhouse not available	730

[1] The typical operating flow ranges of Narrows 2 facilities are limited by long-term reliability considerations, such as vibration and cavitation of the runner; and are as follows: the Narrows 2 Powerhouse between 350 and 3,400 cfs; the Partial Bypass between 0 and 230 cfs (with physical capacity to release as high as 650 cfs); and the Full Bypass between 150 and 3,000 cfs.

[2] The use of the Narrows 1 Powerhouse is prioritized due to Narrows 1 Powerhouse being classified as a renewable energy source, and the economic value that accompanies the classification.

2.3.1.4 Existing YRDP Maintenance Activities

All YRDP facilities are maintained to ensure safe and reliable operation. Each YRDP facility is visited at least several times weekly by Yuba Water's personnel who are experienced and familiar with the facilities. Potential problems are identified and corrected, or scheduled for repair as they are discovered, in order of the severity of the potential problems. YRDP operations personnel are on duty seven days a week, and maintenance personnel are on duty Monday through Friday. Additionally, remote operation and monitoring of the YRDP facilities is automatically controlled by a supervisory control and data acquisition (SCADA) system from the YRDP's Colgate Powerhouse, which is staffed 24 hours a day 7 days a week. Stream gages and power facilities are continuously monitored, and any parameters out of the normal operating ranges are brought to the Colgate Powerhouse operator's attention with alarms. The operator evaluates and determines further action, including call-out of O&M personnel.

Ongoing YRDP maintenance includes testing gates and valves at the dams and intakes throughout the year when impact to YRDP operations can be minimized. Spill gates are operated during the spring and fall, consistent with the Division of Safety of Dams gate operation certificates. FERC requires annual testing of the gates and valve-testing every 5 years, but Yuba Water also operates

gates and valves at least once every 3 years for water rights purposes at each location and Yuba Water tests their large valves annually.

Yuba Water typically conducts annual maintenance on the powerhouses during the fall (September through November), when consumptive water and power demands are generally low. Each powerhouse is taken out of service for approximately 1 to 3 weeks on staggered schedule. Maintenance includes inspections of equipment in the powerhouse and switchyard and may include replacing parts and calibrating components. Annual maintenance does not typically require a reservoir drawdown, but downstream YRDP operations can be affected by certain outages.

The only YRDP spillway gates are located at New Bullards Bar Dam. The New Bullards Bar Dam spillway gates are inspected annually to check items including functionality and structural integrity. Functional checks are conducted annually, while inspections take place in the summer, after flood season use, and in the fall prior to flood season use. New Bullards Bar Dam's spillway can be accessed by various means throughout the year.

2.3.1.5 Existing YRDP Recreation Facilities

YRDP recreation facilities are located in the North Yuba and Middle Yuba River Watersheds. Developed and undeveloped recreation opportunities occur at New Bullards Bar Reservoir and the Our House and Log Cabin Diversion Dam impoundments.

The YRDP's developed recreation facilities (16 total) are located at New Bullards Bar Reservoir and include overnight camping, picnicking, trails, and boat launching facilities. Thirteen of the recreation facilities are located on NFS land, and three facilities are located on land owned by Yuba Water. All existing YRDP project trails are located within the existing FERC Project Boundary, except for a few short sections of the Bullards Bar Trail to the east of Dark Day Boat Launch. The YRDP also includes two undeveloped recreation sites at Our House and Log Cabin Diversion Dams located on NFS land within the existing FERC Project Boundary. Campgrounds with vehicle and boat-in access typically include vault restrooms, picnic tables, pedestal grills/fire rings, and food lockers. Campgrounds with vehicle access have group, single- and multi-family sites for tent and RV camping that may have paved or gravel-surfaced parking spurs, flush restrooms, and potable water spigots throughout the campground. Picnic areas may have vault restrooms, potable water, parking areas, picnic tables, and pedestal grills. Boat launches have parking areas, surfaced launch lane(s), courtesy docks, and restrooms. Existing YRDP recreation resources, facilities, land ownership, condition, accessibility and current and projected use levels are described in **Appendix 2B-14** (Recreation Facilities Plan). Additional information about the existing YRDP recreation facilities is provided in FERC (2019) and YCWA (2017a) AFLA.

2.3.1.6 Existing YRDP Environmental Measures

The existing FERC license for the YRDP includes 60 articles. Of these, Yuba Water considers 19 articles (Articles 28, 29, 30, 35, 36, 41, 42, 43, 44, 48, 50, 51, 52, 58, 60, 62, 65, 66, and 67), "completed" because each pertains to completion of a construction activity, a filing related to a construction activity, or another activity. As a result, the existing license contains 41 "active" articles. Complete descriptions of the articles in the current FERC license for the YRDP are

available on Yuba Water's relicensing website (https://www.yubawater.org/217/Yuba-River-Development-Project-Relicensi).

2.3.2 Existing Narrows Project

2.3.2.1 Existing Narrows Project Facilities

The existing Narrows Project consists of one development that includes: one tunnel, one penstock and standpipe, one powerhouse, and one powerhouse access tram. Yuba Water owns, operates and maintains these Narrows Project works. The Narrows Project works do not include any dams, intakes, reservoirs, open water conveyance facilities, switchyards or transmission lines,[19] roads,[20] recreation facilities, or active borrow or spoil areas. In addition, the USACE-owned portion of the tunnel (see Section 2.4.3.1 below) is not a Narrows Project facility. Existing Narrows Project works, which are shown in Figure 2.2-3 in Chapter 2, include:

- Narrows Tunnel - a 1,077-ft-long tunnel that connects to the USACE tunnel and to the Narrows Penstock. The first 1,000 ft of the Narrows Project tunnel is irregularly shaped and gunite-lined, with an average height of 11 ft, 9 in and an average width of 11 ft, 6 in. The next 77 ft of the tunnel consists of an 8-ft diameter, gunite-lined circular section. The Narrows Project includes an adit portal[21] located on the southeastern wall of the Yuba River canyon, which connects to the Narrows Project tunnel near the upstream end. The adit portal is the point of delineation between the USACE-owned tunnel and the downstream portion of the tunnel that is part of the Narrows Project works. The Narrows Project does not include a control gate at the upstream end of the tunnel. The USACE tunnel intake has the ability to fully open or close its tunnel and, thereby, the Narrows Project's Narrows Tunnel.

- Narrows Penstock - a 266-ft-long steel pipe that connects the Narrows Tunnel to the Narrows 1 Powerhouse. The penstock exits the tunnel part way up the steep south bank of the Yuba River canyon at an elevation of 436 ft. The penstock is exposed for 165 ft between the upper and lower anchor blocks, where it is inclined down the slope at an angle of 55 degrees. The steel pipe has welded longitudinal seams and riveted circumferential butt joints. The penstock pipe plate thickness varies from 7/16 to 1/2 in. The first 260 ft are 8 ft inside diameter, and the last 6 ft taper from 8 ft to 7.6 ft inside diameter. The majority of the penstock pipe is above ground, supported on the hillside by two anchors and three piers. A standpipe for pressure relief is attached to the upper end of the penstock and extends further up the slope above the penstock. The surge structure is a 227-ft-long, 24 in. steel standpipe.

- Narrows 1 Powerhouse - a reinforced concrete structure, 82 ft, 6 in. by 43 ft, 8 in. and a total height of approximately 92 ft. The powerhouse contains a main floor, basement, and sub-basement. The powerhouse was constructed in 1941 and 1942 and began commercial operation on December 29, 1942. The turbine within the powerhouse consists of a single

[19] The Narrows 1 Powerhouse is connected to the power grid via PG&E's Narrows No. 1 and Narrows No. 2 Transmission Line Project (FERC Project No. 2678), which is composed of a 1,100-ft-long, three-phase 11-kilovolt (kV) transmission line from the Narrows 1 Powerhouse to a substation that interconnects with the electric grid. Therefore, the Narrows Project does not have a primary transmission line.

[20] Access to the Narrows Project is entirely over public roads.

[21] See Section 2.4.3.1, below.

vertical "I.P. Morris" Francis turbine designed for 13,500 horsepower at 235 ft of head and is capable of passing up to 730 cfs. The turbine is equipped with a Pelton Water Wheel Company 100 percent relief valve with a 60-in. inlet and a 48-in. outlet. A 90-in. butterfly valve is located in the penstock at the turbine inlet. Control of the unit is accomplished with a Pelton hydraulic controller, which is a combination hydraulic cylinder and motor-driven jack screw functioning in place of a servomotor.

The generator is a 3 phase, 60 Hertz, 11,000 volt (V), 300 revolutions per minute (rpm) 12,000 kilovolt-amperes (kVA), 0.85 power factor vertical Westinghouse Electric and Manufacturing Company unit. The generator is directly connected to the turbine and to the 250 V, 100 kVA direct current exciter. The exciter field is energized from the 125 V storage battery and charging set. The generator is provided with a closed system of air cooling, and the bearings are water cooled. Additional generator protection is provided for overload, overvoltage, overspeed, and temperature. Once water has been utilized by the turbine to generate electricity, it exits the powerhouse and discharges directly into the Yuba River. A 48-in.-diameter bypass pipe with a 48-in.-diameter butterfly valve and a 48-in. by 36-in. "Larner Johnson" needle valve is located on the penstock side of the penstock butterfly valve for the purpose of bypassing water to the Yuba River when the unit is shut down. Maximum hydraulic capacity through the bypass pipe is 550 cfs. Yuba Water reports flow through the powerhouse via the USGS Gage 11417970, Narrows No. 1 Powerhouse at Englebright Dam. The FERC-authorized installed capacity of the unit, calculated in accordance with 18 C.F.R. 11.1(i), is 12,000 kW (i.e., generator limited).

- Powerhouse Access Tram - a car running on a set of steel tracks from elevation 849 ft to the main generator floor elevation of 332 ft. The tramcar is cable-hoisted from an electrically operated drum located at the top of the tramway. When not in use, the tramcar is stored in a wood-framed structure containing the hoist and electronics for the hoist controls. The structure has plan dimensions of approximately 20 ft by 32 ft. The foundation of the hoist, motors, and tram house is constructed of reinforced concrete.

Yuba Water conducts annual mechanical and electrical inspections and maintenance at Narrows 1 Powerhouse to verify the structural and/or functional integrity of the works and to identify conditions that might disrupt operations. This activity typically occurs in June or July and extends for approximately two weeks but can be longer or shorter depending on the planned maintenance activities to occur during the outage.

2.3.2.2 Existing Narrows FERC Project Boundary

The FERC Project Boundary for the Narrows Project (shown on Figure 2.2-3) consists of all lands necessary for Yuba Water's safe O&M of the project. The existing FERC Project Boundary for the Narrows Project includes 2.92 ac, including 2.37 ac on which above-ground Narrows Project works are located, and 0.55-ac of USACE lands overlying the Narrows Tunnel (i.e., there are no above-ground works on federal lands). Along the tunnel alignment, the FERC Project Boundary begins at the adit portal[22] located on the southeastern wall of the Yuba River canyon. The Project

[22] The 1994 O&M Agreement between PG&E and USACE for the Narrows Project describes ownership (i.e., title) of Narrows Project facilities, including a description of the tunnel adit plug (formerly owned by PG&E and now owned by Yuba Water), steel lining and dished head, which if abandoned or no longer needed, would pass back to the USACE.

Boundary includes 30 ft on either side of centerline along the Narrows Tunnel and Narrows Penstock (i.e., a 60-ft corridor), 15 ft on either side of the centerline of the Powerhouse Access Tram (i.e., a 30-ft corridor), and 65 ft from the Narrows 1 Powerhouse outside wall. More detailed maps of the existing FERC Project Boundary for the Narrows Project are provided in **Appendix 2F-5**.

2.3.2.3 Existing Narrows Project Operations

2.3.2.3.1 Automatic Operations

Typically, Yuba Water remotely operates and monitors Narrows Project works from Yuba Water's New Colgate Powerhouse Operations Center, which is staffed at all times. In addition, the Narrows Project can be manually operated on site. Yuba Water personnel visit the Narrows Project facilities several times a week.

2.3.2.3.2 Coordinated Operations Between Narrows 1 and YRDP's Narrows 2

Yuba Water began operating the Narrows Project in April 2020. Before that, Yuba Water and the previous licensee (PG&E) for the Narrows Project coordinated YRDP and Narrows Project operations pursuant to a coordinated operations agreement. Many factors contribute to how the YRDP and the Narrows Project are operated in tandem at any given time to meet the downstream water demands, instream flow requirements and power generation, including equipment outages, storm flows and reliability of continuous water supply conveyance. However, generally, the Narrows 1 Powerhouse is operated in conjunction with the Narrows 2 Powerhouse and/or the Narrows 2 Full Bypass as follows:

- If required releases are less than the Narrows 1 Powerhouse capacity at the time, only the Narrows 1 Powerhouse is operated.
- If required releases are greater than the Narrows 1 Powerhouse capacity at the time and range up to about 900 cfs, the Narrows 1 Powerhouse is operated and the remainder of the required release is released from the Narrows 2 Full or Partial bypasses, thereby superseding the fourth change described and noted above.
- If required releases are greater than 900 cfs, either the Narrows 2 Powerhouse is operated alone or the Narrows 1 and Narrows 2 powerhouses are operated together, mainly depending upon the electric market and the specific required release rate.
- If the Narrows 2 Powerhouse is operating and the Narrows 1 Powerhouse is not operating but is to be brought online, the Narrows 1 Powerhouse is synchronized to the electric grid while reducing the flow through the Narrows 2 Powerhouse to compensate for the increased releases from the Narrows 1 Powerhouse. As the Narrows 1 Powerhouse load is increased, releases from the Narrows 2 Powerhouse are decreased to a level needed to supplement the Narrows 1 Powerhouse release. The transition could take between 10 and 30 minutes to reach the full flow of the Narrows 1 Powerhouse.
- If the Narrows 1 Powerhouse is operating and the Narrows 2 Powerhouse is not operating but is to be brought online, the process described above is reversed.

Due to the above operational changes, some of them being relatively recent, historical flows in the lower Yuba River near the Narrows Project and historical Narrows Project operations information do not reflect the amount of water available to the Narrows Project under current conditions.

2.3.2.3.3 Narrows 1 Powerhouse Operations

The Narrows 1 Powerhouse contains a single vertical "I.P. Morris" Francis turbine designed for 13,500 horsepower at 235 ft effective head and capable of passing up to 730 cfs. Table 2.3-4 shows from WY 2020 through WY 2024, the Narrows Project gross annual generation, plant capability and plant factor.

Table 2.3-4. Narrows Project historical annual gross generation, plant capability and plant factor for WYs 2020 through 2024.

Water Year	Gross Annual Generation (KWh)	Plant Capability (kW)	Plant Factor (%)
2020	4,011,659[1]	105,120,000	4%
2021	75,380,293	105,120,000	72%
2022	69,872,734	105,120,000	66%
2023	69,573,536	105,120,000	66%
2024	81,958,092	105,120,000	78%
Average Annual	**67,380,249**	**105,120,000**	**57%**
Average Annual Excluding WY 2020	**74,196,163**	**105,120,000**	**71%**

Source: Yuba Water's annual filings with FERC.

[1] WY 2020 generation impacted by prolonged outage related to a standpipe replacement project.

Plant factor is calculated by dividing the amount of generation that occurred in the WY by the amount of generation that would have occurred if the powerhouse operated at maximum capability for the entire year. Yuba Water began operating the Narrows Project in April 2020. Yuba Water estimates that, on average, less than one kW of Narrows Project power is used on site to serve the Narrows 1 Powerhouse.

The dependable capacity of a generating facility is defined as "*the generating capacity that the plant can deliver under the most adverse water supply conditions to meet the needs of an electric power system with a given maximum demand*" (Elliott et al. 1997). One of the critical parameters for defining dependable capacity is the period over which the capacity must be provided. Traditionally, a year or season from time of maximum storage to minimum storage is used for the time period by which capacity is calculated. Because Englebright Reservoir storage is maintained within a relatively narrow range, the Narrows 1 Powerhouse generation capacity is flow-limited, rather than head-limited. Furthermore, because releases from Englebright Reservoir are required at all times to provide flow in the lower Yuba River downstream of Englebright Reservoir, and the Narrows 1 Powerhouse can be operated for lower flows than the Narrows 2 Powerhouse, the dependable capacity at the Narrows 1 Powerhouse is determined based on the period with the lowest historical flow at the Smartsville Gage.

For the Narrows Project, Yuba Water used September 24, 1977, when the total historical flow at the Smartsville Gage was 140 cfs and assumed the lowest operational head on the Narrows 1 Powerhouse (217 ft) to determine the historical dependable capacity. Under these conditions, the historical dependable capacity of the Narrows 1 Powerhouse is 1,390 kW. Under simulated conditions, the lowest total flow at the Smartsville Gage of 392 cfs occurred on August 30, 1977; assuming the lowest operational head on the Narrows 1 Powerhouse as described above, the simulated dependable capacity of the Narrows 1 Powerhouse is 6,245 kW.

2.3.2.4 Existing Narrows Project Maintenance Activities

All Narrows Project facilities are maintained to ensure safe and reliable operation. Each Narrows Project facility is visited at least several times weekly by Yuba Water's personnel who are experienced and familiar with the facilities. Potential problems are identified and corrected, or scheduled for repair as they are discovered, in order of the severity of the potential problems. Narrows Project operations personnel are on duty seven days a week, and maintenance personnel are on duty Monday through Friday. Additionally, remote operation and monitoring of the Narrows Project facilities is automatically controlled by the SCADA system from the YRDP's Colgate Powerhouse, which is staffed 24 hours a day 7 days a week. As with the YRDP, stream gages and power facilities are continuously monitored, and any parameters out of the normal operating ranges are brought to the Colgate Powerhouse operator's attention with alarms. The operator evaluates and determines further action, including call-out of O&M personnel.

Yuba Water also conducts annual mechanical and electrical inspections and maintenance at Narrows 1 Powerhouse to verify the structural and/or functional integrity of the works and to identify conditions that might disrupt operations. This activity typically occurs in June or July and extends for approximately two weeks but can be longer or shorter depending on the planned maintenance activities to occur during the outage. During planned outages, the unit hydraulic energy is controlled using either the 90-in. penstock butterfly valve or by dewatering the tunnel and penstock by requesting the USACE close its intake gates. During an unplanned outage, such as when the unit trips offline, water flows to the penstock bypass pipe. Depending on maintenance work needed on the penstock, it can be dewatered by closing the USACE's intake gates. Air is expelled through the penstock standpipe when refilling or draining the penstock. The turbine shutoff valve at the powerhouse is operated at least annually to verify integrity. Maintenance on the penstock is implemented on an as-needed basis. The bypass pipe/system is tested annually.

Yuba Water implements routine maintenance activities within the FERC Project Boundary to ensure safe and reliable operation of Narrows Project facilities and to protect worker and public health and safety and environmental resources. Activities include re-painting the exterior of the powerhouse, penstocks, surge chamber (i.e., standpipe), tram house, and tram as needed. Vegetation management, primarily trimming by hand and using herbicides, is implemented by Yuba Water at Narrows Project works, as needed. Vegetation management is implemented within the area necessary to reduce fire hazard, to provide adequate Narrows Project facility access and inspection, to protect Narrows Project works, and to provide for worker health and safety. These management activities are conducted as needed in conjunction with facility inspections.

Yuba Water uses herbicides and surfactants in addition to manual vegetation management activities on as needed basis at Narrows Project works on Yuba Water lands, along with USACE lands if Yuba Water has obtained permission from USACE to use herbicides on its lands. All herbicide applications occur under the direction of a licensed Pest Control Advisor (PCA). Prior to applying herbicides, Yuba Water establishes protocols that require individuals applying herbicides to complete training on general application procedures and precautions. In addition, the PCA prepares Pest Control Recommendations (PCR) for each site prescribing specific application direction and associated precautions that must be strictly followed. Herbicides used near the water's edge are only those certified for use in or near water. In general, herbicides are applied

using backpack sprayers or small hand-held sprayers, and all herbicides are applied in accordance with label instructions and PCR.

Few hazard trees, generally defined as dead or dying trees or trees with defects that may result in failure and have the potential to cause property damage, personal injury, or death, are near Narrows Project facilities. However, if a hazard tree is identified, removal is conducted with a chainsaw, handheld saw, or other equipment. Smaller diameter debris from felled hazard trees is either chipped or lopped and scattered. Downed logs are typically left onsite and only moved if needed for safety. If moving logs is necessary, it may be completed by hand or machine depending on the situation. If the tree is on USACE-administered lands, USACE permission would be obtained prior to removal.

Yuba Water implements rodent control as needed in facility interiors using non-restricted rodenticides (e.g., D-Con®), which are applied in accordance with the label instructions. Rodent control occurs within the Narrows 1 Powerhouse as well as other Narrows Project facilities and is only applied on USACE-administered lands with the approval of USACE.

2.3.2.5 Existing Narrows Project Recreation Facilities

There are no existing developed or undeveloped recreation facilities associated with the Narrows Project.

2.3.2.6 Existing Narrows Project Environmental Measures

The existing FERC license for the Narrows Project includes 50 articles. Of the 50 articles in the existing FERC license, Yuba Water considers 10 articles (articles 14, 27, 28, 203, 401, 404, 406, 407, 408, and 409), "completed" because the article pertains to an activity that either has been completed or is no longer relevant to the Narrows Project. As a result, the existing license contains 40 articles that Yuba Water considers "active". Complete descriptions of the articles in the current FERC license for the Narrows Project are presented in Exhibit B of Yuba Water's (2023) FLA, which is available on Yuba Water's relicensing website (https://www.yubawater.org/357/Narrows-Relicensing).

2.3.3 Existing Non-Yuba Facilities

In addition to the existing YRDP and Narrows Project facilities identified above, there are various other existing hydroelectric facilities in the region that are not involved in the Proposed Projects, but may be affected by the Proposed Projects or contribute to environmental effects along with the Proposed Projects.[23]

2.3.3.1 Englebright Dam and Reservoir

Englebright Dam and Reservoir and associated facilities are owned and operated by the USACE and are not subject to FERC's jurisdiction or in the FERC-designated Project Boundary for either the YRDP or the Narrows Project. Englebright Dam is a concrete constant angle arch structure, with a

[23] The non-Yuba facilities (and their resultant operations) described in this section have the potential to affect inflows into Englebright Reservoir and hydrologic conditions (e.g., flows and water temperatures) in the lower Yuba River.

crest length of 1,142 ft and a maximum height of 260 ft. Englebright Reservoir is about 9 miles long and has about 24 miles of shoreline and a surface area of about 815 ac at its NMWSE of 527 ft[24] (i.e., spillway crest elevation).

The primary purpose of USACE's Englebright Dam is to capture sediment and debris derived from extensive historical hydraulic mining that occurred in the upper Yuba River Watershed (YCWA 2017a). At the time of construction, Englebright Reservoir had a gross storage capacity of approximately 70,000 ac-ft. Although hydraulic mining no longer occurs in the upper reaches of the Yuba River, Englebright Dam continues to capture hydraulic mining debris from the upstream areas. The current reservoir's gross storage capacity is estimated to be approximately 50,000 ac-ft. The surface water elevation of the reservoir typically fluctuates between 517 ft and 525 ft, with a normal maximum of 527 ft.

The existing FERC license for the Narrows Project states that the O&M of Narrows Project works that, in the judgment of USACE, may affect the structural integrity of operation of the USACE's Englebright Dam are subject to periodic or continuous inspections by the USACE. Consequently, the Narrows Project intake structure, trash rack, and the first 700 ft of the conduit are regularly inspected on a 5-year cycle by the USACE, as these three components are owned and maintained by the USACE (USACE 2013). These three components extend to the structure known as the "adit."[25] The remaining portion of the conduit, extending from the adit to the Narrows 1 power plant and its appurtenances, is owned and maintained by Yuba Water. Yuba Water cooperates with USACE in conducting any requested inspections, and no deficiencies or difficulties have been identified to date (YCWA 2023a). Yuba Water conducts separate inspections of its Narrows 1 facility for hydropower purposes.

2.3.3.2 Other FERC Relicensing Projects in the Upper Yuba River Watershed

Upstream of USACE's Englebright Dam and Reservoir, there are five other hydroelectric projects in the Yuba River Watershed that are currently in the relicensing process, which include:

- Yuba-Bear Hydroelectric Project (FERC Project No. 2266-102)
- Drum-Spaulding Hydroelectric Project (Project No. 2310)[26]
    - Lower Drum Hydroelectric Project (FERC Project No. 14531-000)
    - Deer Creek Hydroelectric Project (FERC Project No. 14530-000)

[24] Elevation data are in U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Geodetic Survey Vertical Datum of 1929 (NGVD 29), unless otherwise stated.

[25] FERC approved PG&E's O&M Agreement fulfilling Articles 101 and 102 on November 18, 1994, and on March 31, 2020, the agreement was transferred to Yuba Water as the new licensee for the Narrows Project. The agreement states that if the outlet facilities are no longer needed for the Narrows Project, "*title to the concrete tunnel adit plug, steel lining and dished head will pass to the Corps*." Yuba Water shall also grant the USACE free and unrestricted access to, through and across Narrows Project lands. The USACE reserves the right to direct Yuba Water to cease operation of the Narrows Project if it is deemed detrimental to water quality or water control objectives, public safety, or other events that may threaten structural integrity (YCWA 2023a).

[26] PG&E's current proposal to FERC includes splitting the existing Drum Spaulding Hydroelectric Project into three separate new licensed projects that would include: (1) the Lower Drum Project; (2) Deer Creek Project; and (3) the remaining Drum-Spaulding Project (referred to as the Upper Drum-Spaulding Project) (FERC 2014).

    - Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310-193)
- South Feather Power Project (FERC Project No. 2088-068)

The Yuba-Bear Hydroelectric Project (Yuba-Bear Project) is located in Sierra, Nevada, and Placer Counties, California. In 2011, NID filed an application with FERC for a new major license to operate and maintain the Yuba-Bear Project that would increase its licensed capacity from 79.32 MW to 90.72 MW. An amended application was filed on June 18, 2012. The Yuba-Bear Project includes four developments located on the Middle Yuba River, the South Yuba River, and the Bear River. The Yuba-Bear Project's developments include Bowman (3.6-MW installed capacity), Dutch Flat No. 2 (24.6-MW installed capacity), Chicago Park (39 MW installed capacity), and Rollins (12.2-MW installed capacity) (FERC 2014).

The Drum-Spaulding Hydroelectric Project (Project No. 2310) is located on the South Yuba River, the Bear River, South Fork of Deer Creek, and the North Fork of the North Fork American River in Nevada and Placer Counties, California. In 2011, PG&E filed an application with FERC for a new major license to operate and maintain the Drum-Spaulding Project and to retire its Alta Powerhouse Unit 2 that would reduce the project's licensed capacity from 192.5 MW to 191.5 MW. All project facilities in the Yuba River Basin are located in the headwaters of the South Yuba River and are upstream of Englebright Reservoir (a non-project facility). The Drum Spaulding Project consists of 10 developments, including: Spaulding No. 3, Spaulding No. 1 and No. 2, Deer Creek, Alta, Drum No. 1 and No. 2, Dutch Flat No. 1, Halsey, Wise, Wise No. 2, and Newcastle. In 2013, PG&E amended its proposal to split the currently licensed Drum-Spaulding Project into three new licensed projects: (1) the Lower Drum Project; (2) Deer Creek Project; and (3) the remaining Drum-Spaulding Project (referred to as the Upper Drum-Spaulding Project) (FERC 2014).

- ***Lower Drum Project*** – Includes the following developments: Halsey (11-MW installed capacity), Wise (14-MW installed capacity), Wise No. 2 (3.2-MW installed capacity), and Newcastle (11.5-MW installed capacity). Among the four developments, there are 3 reservoirs, 4 canals, 4 powerhouses, 1 distribution line, 1 transmission line, and appurtenant facilities and structures, including recreation facilities. The project diverts water from the Bear River at the Bear River canal diversion dam below the Yuba-Bear Project's Rollins Dam. Water diverted from the Bear River moves through the Lower Drum Project for power generation and delivery at various locations for consumptive water use by NID and the Placer County Water Agency. The Lower Drum Project facilities affect flows in Dry Creek below Halsey Afterbay, Rock Creek below Rock Creek Reservoir, Auburn Ravine below South Canal, and Mormon Ravine below Newcastle Powerhouse (FERC 2014).
- ***Deer Creek Project*** – The 5.7-MW Deer Creek development includes: (1) the South Yuba canal and Chalk Bluff canal; (2) Deer Creek forebay; (3) Deer Creek powerhouse penstock; (4) Deer Creek powerhouse; (4) Deer Creek–Drum transmission line; and (5) appurtenant facilities and structures, including one recreation facility. The Deer Creek Project diverts water at the Spaulding No. 2 Powerhouse via the South Yuba canal to the Chalk Bluff canal, and from there to the Deer Creek powerhouse which discharges to the South Fork of Deer Creek.

- ***Upper Drum-Spaulding Project*** – Includes the following developments: Spaulding No. 3 (5.8-MW installed capacity), Spaulding No. 1 and No. 2 (11.4-MW installed capacity), Alta (2-MW installed capacity), Drum No. 1 and No. 2 (105.9-MW installed capacity), and Dutch Flat No. 1 (22-MW installed capacity). Among the five developments, there are 26 reservoirs, 4 water conduits, 6 powerhouses, 4 transmission lines, and appurtenant facilities and structures, including recreation facilities. The project's larger reservoirs (Fordyce Lake, Lake Spaulding, and Lake Valley Reservoir) operate as storage reservoirs to capture precipitation during the spring and are slowly drawn down through summer and fall months, releasing water for power generation, irrigation, and domestic consumption purposes (FERC 2014).

Water rights held by both NID and PG&E are exercised through within-basin diversions and out-of-basin water transfers. Yuba-Bear/Drum-Spaulding (YB/DS) dams on the Middle Yuba and South Yuba rivers collectively divert significant amounts of water from the upper Yuba River Watershed and transfer that water out of the watershed. In 2014, FERC prepared a FEIS that evaluated the impacts of PG&E's Upper-Drum-Spaulding, Lower Drum, and Deer Creek Projects and NID's Yuba-Bear Project. FERC (2014) reported that those projects' average combined diversion of about 410,000 ac-ft of water annually from the Yuba River to the Bear River watershed accounts for about 17 percent of the natural unimpaired discharge from the upper Yuba watershed (North Yuba, Middle Yuba, and South Yuba rivers), but stated that it is difficult to determine the relative influence of the Upper Drum-Spaulding, Lower Drum, Deer Creek, and Yuba-Bear Projects diversions on anadromous salmonid habitat conditions in the lower Yuba River downstream of Englebright Dam given existing flow management operations.

More recently, in response to FERC's 2021 AIR, Yuba Water's (2022) analysis demonstrated that flows in the lower Yuba River are cumulatively affected by the out of basin water transfers resulting from operations of the YB/DS projects.[27] These out-of-basin transfers significantly deplete water supply that otherwise potentially would be available to benefit ESA-listed fish species and their habitat in the lower Yuba River. For the Water Year (WY) 1990 to WY 2016 period, total exports by NID and PG&E ranged from about 265 thousand acre-feet (TAF) (30% of average annual unimpaired watershed runoff) in Critically Dry WYs and 316 TAF (28% of average annual unimpaired watershed runoff) in Dry WYs to about 498 TAF (13% of average annual unimpaired watershed runoff) in Wet WYs (YCWA 2022a).

In contrast to the YB/DS projects, water that the YRDP diverts stays in the Yuba River Watershed. Yuba Water's hydroelectric diversions involve power generation exclusively within the watershed. Yuba Water's consumptive diversions divert about 260 TAF per year from the lower Yuba River at Daguerre Point Dam. Because Daguerre Point Dam is located downstream of the most heavily utilized salmonid spawning and rearing habitat in the lower Yuba River, the YRDP's consumptive diversions provide significant flow and water temperature benefits in that habitat during the summer and fall. In addition, Yuba Water's transfers involve water that flows through the entirety of the lower Yuba River before being diverted by other users downstream (i.e., outside of the Yuba River Watershed). For additional information on YB/DS flow-related operations, see Section

[27] This DEIR uses the term "YB/DS projects" to refer to the following other FERC relicensing projects located in the upper Yuba River Watershed, which include: (1) NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266); and (2) PG&E's Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310), Lower Drum Hydroelectric Project (FERC Project No. 14531) and Deer Creek Hydroelectric Project (FERC Project No. 14530).

4.3.3.1.4, Technical Considerations and Rationale Supporting the "Dual Baseline" Approach of this DEIR.

In 2007, the South Feather Water and Power Agency (South Feather), submitted an application to FERC to relicense its 117.3-MW South Feather Power Project (Project No. 2088-068), which is located on the South Fork Feather River, Lost Creek, and Slate Creek in Butte, Yuba, and Plumas Counties, California. Slate Creek, a tributary to the North Yuba River, extends from the Slate Creek Diversion Dam to the confluence with the North Yuba River. The lower section of Slate Creek contains migratory species from New Bullards Bar Reservoir (e.g., kokanee) which could migrate up to a natural upstream migration barrier located approximately 4.6 miles upstream of the North Yuba River confluence. Diversion of water from Slate Creek by South Feather reduces the volume of water that is contributed to the North Yuba River via Slate Creek. In 2023, FERC issued a draft SEIS for the South Feather Power Project, which analyzed the environmental measures in the SWRCB's WQC, the USFS's Revised Final FPA Section 4(e) Conditions, and the South Feather Settlement Agreement (FERC 2023). Because the YRDP is located downstream of Slate Creek, Yuba Water recommended that FERC reserve authority to require South Feather to make reasonable provisions for modifying project facilities or operations as necessary to mitigate or avoid cumulative effects identified in any environmental analysis of the YRDP. Yuba Water indicated that this reservation would be applicable in the context of any relicensing or license amendment proceeding involving the downstream YRDP (FERC 2023).

2.3.3.3 Measures in Other Licenses, Agreements and Contracts that Affect YRDP and Narrows Project Operations

In addition to the current FERC license requirements, various applicable licenses, agreements and contracts include various streamflow-related requirements, which are summarized below. These licenses, agreements and contracts, and the terms and conditions in them, affect both YRDP and Narrows Project operations, but are not part of the existing FERC licenses.

2.3.3.3.1 Lower Yuba River Accord and SWRCB Corrected Order Water Right 2008-0014 (No Expiration Date)

The Yuba Accord was developed by a multi-agency resource team, including representatives from Yuba Water, NMFS, USFWS, CDFW, and a group of NGOs. It originally consisted of the following four agreements that were executed in 2007:

- The Lower Yuba River Fisheries Agreement, which specifies the Yuba Accord's lower Yuba River minimum streamflows and creates a detailed fisheries monitoring and evaluation program;
    - The Water Purchase Agreement, under which DWR purchases water from Yuba Water, some of which is provided by the Yuba Accord's minimum streamflows, for

California Bay-Delta Program (CALFED)'s[28] Environmental Water Account (EWA) and SWP and CVP contractors;

- The Conjunctive Use Agreements with seven of Yuba Water's Member Units,[29] which specify the terms of the Yuba Accord's groundwater conjunctive- use program; and
    - Amendments to the 1966 Power Purchase Contract between Yuba Water and PG&E.[30]

The SWRCB approved modifications to Yuba Water's consumptive water-right permits, and authorized related water transfers, in its Corrected Order WR 2008-0014. Since 2008, Yuba Water has been operating the YRDP to implement the Yuba Accord according to the authorizations and requirements in that corrected order. Subsequent to the SWRCB approval process in 2008, the Cordua Irrigation District (CID), one of the Member Units, also joined the Yuba Accord.

The Yuba Accord includes a specific set of flow schedules for the Yuba River. Flow schedules 1 and 2 were developed to optimize habitat conditions for anadromous fish during high flow years. Schedule 6 flow schedules were developed to create the best habitat conditions for these fish that are possible during very low flow years, considering available water supplies and competing demands. Flow schedules 3, 4 and 5 then were developed by the resource team by using available water supplies to create habitat conditions during the months when additional flows (over Schedule 6 amounts) will provide the greatest benefits. The Yuba Accord also specifies requirements for "Conference Years," which are the very driest years, and are predicted to occur approximately one percent of the time. The flow schedule that is in effect at any particular time is determined by the North Yuba Index (NYI), a hydrologic index that was developed as a part of the Yuba Accord. The flow schedules are listed in Table 2.3-5. The NYI is shown in Figure 2.3-5**.**

[28] CALFED was initiated in 1995 as a cooperative state-federal planning effort between water, environmental, state and Federal officials to resolve water resources conflicts in the Sacramento/San Joaquin Rivers Delta and San Francisco Bay (Bay-Delta) in California. The program planning effort focused on developing a plan to address three main problem areas in the Bay-Delta, including: ecosystem health, water quality, and water supply reliability. This joint federal and California program is administered by the California Bay-Delta Authority, a department within the government of California, administered under the California Resources Agency.

[29] As described in Yuba Water et al. (2007), a Member Unit is any municipality, town, or district wholly or partially within or contiguous to Yuba Water that is empowered to appropriate and deliver water and which contracts with the agency for payment of construction costs or for delivery of water, as defined in Section 2(g) of the Agency Act. Yuba Water provides surface water to eight Member Units, including: Brophy Water District, Browns Valley Irrigation District, Cordua Irrigation District, Dry Creek Mutual Water Company, Hallwood Irrigation Company, Ramirez Water District, South Yuba Water District, and Wheatland Water District.

[30] The Power Purchase Contract, as amended, was in force for 50 years and terminated in April 2016. Yuba Water now operates the YRDP's power operations and contracts with a scheduler to sell generation and other ancillary services from the YRDP to the California power market.

Table 2.3-5. Yuba Accord flow schedules.

Schedule	Oct 1-15	Oct 16-30	Nov 1-30	Dec 1-31	Jan 1-31	Feb 1-29	Mar 1-31	Apr 1-15	Apr 16-30	May 1-15	May 16-31	Jun 1-15	Jun 16-30	Jul 1-31	Aug 1-31	Sep 1-30	Total Annual Vol. (ac-ft)
MARYSVILLE GAGE (cfs)																	
1	500	500	500	500	500	500	700	1,000	1,000	2,000	2,000	1,500	1,500	700	600	500	574,200
2	500	500	500	500	500	500	700	700	800	1,000	1,00	800	500	500	500	500	429,066
3	500	500	500	500	500	500	500	700	700	900	900	500	500	500	500	500	398,722
4	400	400	500	500	500	500	500	600	900	900	600	400	400	400	400	400	361, 944
5	400	400	500	500	500	500	500	500	600	600	400	400	400	400	400	400	334,818
6	350	350	350	350	350	350	350	350	500	500	400	300	150	150	150	350	232,155
SMARTSVILLE GAGE (cfs)																	
A	700	700	700	700	700	700	700	700	--	--	--	--	--	--	--	700	--
B	600	600	600	550	550	550	550	600	--	--	--	--	--	--	--	500	--

Notes:
Marysville Gage flows represent average volumes for the specified period. Actual flows may vary from the indicated flows according to established criteria. Marysville Gage Schedule 6 flows do not include an additional 30,000 ac-ft that SWRCB Corrected Order WR 2008-0014 requires Yuba Water to make available through groundwater substitution transfers. These additional flows will be allocated during Schedule 6 years. Smartsville Gage Schedule A is used with Marysville Schedules 1, 2, 3, and 4. Smartsville Gage Schedule B is used with Marysville Schedules 5 and 6.

During Conference Years, which are defined as years when the NYI is less than 500,000 ac-ft, and which are expected to occur approximately 1 percent of the time, Yuba Water is required to: (1) maintain minimum instream flows in the Yuba River pursuant to Article 33 of Yuba Water's existing FERC license; (2) release any supplemental flows recommended by the Lower Yuba Accord River Management Team (RMT) and approved by the SWRCB's Deputy Director for Water Rights or, if no such recommended flows are effective by April 11 of such a Conference Year, then to release any supplemental flows ordered by the SWRCB, after a hearing under California Code of Regulations (CCR), title 23, section 767; and (3) limit total water supply diversions at Daguerre Point Dam to 250,000 ac-ft.

Yuba Water is proposing to extend the Yuba Accord Water Transfer Program beyond its current expiration date of December 31, 2025 and has prepared a supplemental environmental impact report (SEIR) (supplement to the original EIR prepared for the Yuba Accord in 2007) to satisfy the requirements of CEQA. The Accord Extension does not involve the minimum flow requirements established by the Fisheries Agreement, which will not expire at the same time as the other components of the Yuba Accord. The CEQA process for the Extension of the Lower Yuba River Accord Water Transfer Program is separate from this DEIR and the CEQA process for the YRDP and Narrows Project FERC relicensings.

FLOW SCHEDULE YEAR TYPES
BASED ON THE NORTH YUBA INDEX
FOR ESTABLISHING REQUIRED FLOWS IN THE LOWER YUBA RIVER FISHERIES AGREEMENT

The water year hydrologic classification for the Yuba River to determine the flow requirements of Yuba County Water Agency's water right permits shall be based on the North Yuba Index. Determinations of a year's flow schedule year type shall be made in February, March, April, and May and for any subsequent updates.

Flow Schedule Year Type	North Yuba Index Thousand Acre-Feet (TAF)
Schedule 1	Equal to or greater than 1400
Schedule 2	Equal to or greater than 1040 and less than 1400
Schedule 3	Equal to or greater than 920 and less than 1040
Schedule 4	Equal to or greater than 820 and less than 920
Schedule 5	Equal to or greater than 693 and less than 820
Schedule 6	Equal to or greater than 500 and less than 693
Conference Year	Less than 500

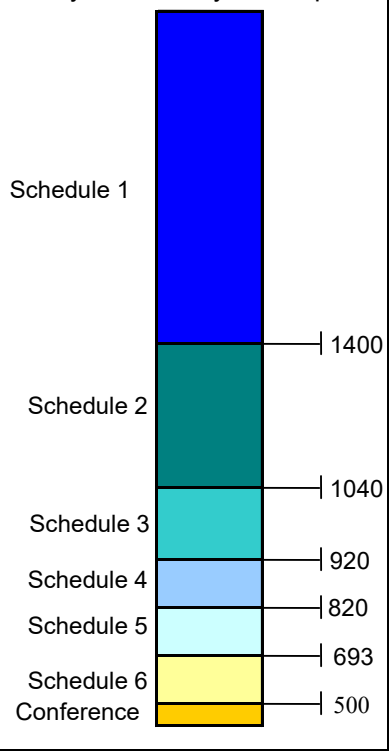

Figure 2.3-5. Yuba Accord North Yuba Water Year Type (WYT) Index.

2.3.3.3.2 Yuba Water's Water Rights for Power (No Expiration Date) for the YRDP and Narrows Project

Yuba Water holds pre-1914 appropriative rights dating from 1897 and post-1914 appropriative water rights confirmed by water right licenses, for the purposes of operating the YRDP for hydroelectric power generation. Table 2.3-6 lists the post-1914 appropriative water right licenses held by Yuba Water for power generation.

Table 2.3-6. Water right licenses held by Yuba Water for operation of the YRDP for power generation.

Priority (date)	SWRCB Designation (application)	SWRCB Designation (license)	Source (Waterbody)	Amount & Place of Diversion or Storage (amount & place)		Season (period)		Place of Beneficial Use (powerhouse)
2/11/1921	2197	435	North Yuba River	700 cfs at New Bullards Bar Dam		1/1 - 12/31		New Colgate Powerhouse
				5,000 ac-ft/yr at New Bullards Bar Dam		about 12/15 to about 7/15		
9/7/1922	3026	436	North Yuba River	10,000 ac-ft/yr at New Bullards Bar Dam		about 12/15 to about 7/15		New Colgate Powerhouse
4/30/1926	5004	777	North Yuba River	15,000 ac-ft/yr at New Bullards Bar Dam		about 12/15 to about 7/15		New Colgate Powerhouse
7/30/1927	5631	11565	Middle Yuba River	810 cfs at Our House Dam	490,000 ac-ft/yr storage in New Bullards Bar Res	1/1-12/31 (dir. div.)	10/15 to 6/30 (stor.)	New Colgate Powerhouse and Narrows 2 Powerhouse
			Oregon Creek	240 cfs at Log Cabin Dam		1/1-12/31 (dir. div.)		
			North Yuba River	1,800 cfs at New Bullards Bar Dam		11/1-7/31 (dir. div.)		
			Yuba River	1,800 cfs at USACE's Englebright Dam		1/1- 12/31		
3/1/1939	9516	3050	North Yuba River	100 cfs at New Bullards Bar Dam		1/1 - 12/31		New Colgate Powerhouse
9/12/1941	10282	5544	North Yuba River	5,335 ac-ft/yr at New Bullards Bar Dam		about 10/1 to about 3/1		New Colgate Powerhouse
								Narrows 2 Powerhouse
2/20/1953	15205	11566	Middle Yuba River	3,200 ac-ft/yr at Log Cabin Dam; storage in New Bullards Bar Res.		5/1- 6/30		New Colgate Powerhouse and Narrows 2 Powerhouse
			North Yuba River	245 cfs and 700 ac-ft/yr at New Bullards Bar Dam		3/15- 6/15 (dir. div.); 5/1- 6/30 (stor.)		
			Yuba River	800 cfs at USACE's Englebright Dam		11/1-7/15		
10/2/1953	15563	11567	Middle Yuba River	30,000 ac-ft/yr at Our House Dam	all storage in New Bullards Bar Res.	10/15 - 6/30		New Colgate Powerhouse and Narrows 2 Powerhouse
			Oregon Creek	1,400 ac-ft/yr at Log Cabin Dam		10/15 - 6/30		
			North Yuba River	146,000 ac-ft/yr at New Bullards Bar Dam		10/15 - 6/30		
			Yuba River	910 cfs at USACE's Englebright Dam		11/1 - 6/30		

Yuba Water operates the YRDP consistent with the terms and conditions of the above water rights.

Yuba Water holds all necessary water rights to operate the Narrows Project at its full capacity. These include a 1936-priority water-right license, and a water right permit issued by the State of California on July 7, 1961, that confirms the priority/first use of the right dated September 21, 1936. As the holder of License No. 6388 (Application No. 8794) issued by the SWRCB, Yuba Water has the right to appropriate water from the Yuba River for the purpose of generating electric energy at Narrows 1 Powerhouse, as provided in Table 2.3-7 below. These water rights are supplemented by riparian

rights gained through ownership of riparian land (see Statement of Water Diversion and Use No. 10838).

Table 2.3-7. Water right licenses held by Yuba Water for operation of the Narrows Project for power generation.

Priority (date)	Statement of Water Diversion and Use (Riparian)	SWRCB Designation (license)	Source (waterbody)	Direct Diversion and Amount & Place of Diversion Storage	Season (period)	Place of Beneficial Use (powerhouse)
2/21/1936	--	6388	Yuba River	700 cfs	1/1 – 12/31	Narrows 1 Powerhouse
				Englebright Reservoir 45,000 ac-ft	10/1 – 3/1	
1942	10838	--	Yuba River	740 cfs	--	Narrows Powerhouse

2.3.3.3.3 USACE and Yuba Water Use of Outlet Facilities and Storage Space Agreement and Operations and Maintenance Agreement

In compliance with Articles 101 and 102 of the original FERC license for the Narrows Project, PG&E entered into a Use of Outlet Facilities and Storage Space Agreement and an O&M Agreement with the USACE in November 1994. The agreements were fully transferred to Yuba Water in 2020.

2.3.3.3.4 Water Supply Deliveries

Within the YRDP project area, Yuba Water pumps some water directly from New Bullards Bar Reservoir to supply water to the Cottage Creek Water Treatment Plant for domestic and recreational uses adjacent to the reservoir. The amount of this pumping averages approximately 6 ac-ft per year, which does not affect YRDP operations. Yuba Water anticipates that pumping of this small amount of water will continue during the period of the new license.

Downstream of the YRDP and the Narrows Project, water is diverted under Yuba Water's consumptive-use water right permits to eight water users, which are collectively referred to as the Yuba Water Member Units. In 2016, new agreements were signed that changed some of the volumes, timing, and conditions for providing water supplies from the YRDP. Water supply is provided under Yuba Water's consumptive-use water-right permits to eight water users, which are collectively referred to as the Yuba Water Member Units. The places of water delivery to Yuba Water's Member Units are listed in Table 2.3-8. The Yuba Water Member Unit service areas are shown in Figure 2.3-6.

Table 2.3-8. Yuba Water's annual contract amounts and place of delivery.

Member Unit	Water Right Based Supply (ac-ft)	Project Based Supply (ac-ft)	Total Contract (ac-ft)
BROWNS VALLEY IRRIGATION DISTRICT PUMPLINE DIVERSION FACILITY[1]			
Browns Valley Irrigation District	24,505	9,500	34,005
YUBA MAIN CANAL[2]			
Brophy Water District	--	86,870	86,870
South Yuba Water District	--	54,307	54,307
Dry Creek Mutual Water Company	--	17,751	17,751
Wheatland Water District	--	40,230	40,230
HALLWOOD-CORDUA CANAL[3]			
Cordua Irrigation District	60,000	24,000	84,000
Hallwood Irrigation Company	78,000	11,208	89,208
Ramirez Water District	--	30,389	30,389
Total	**162,505**	**274,255**	**436,760**

Notes: BVID=Browns Valley Irrigation District, BWD=Brophy Water District, CID=Cordua Irrigation District, DCMWC=Dry Creek Mutual Water Company, HID=Hallwood Irrigation District, RWD=Ramirez Water District, SYWD=South Yuba Water District, WWD=Wheatland Water District.

[1] BVID receives water at the Pumpline Diversion Facility, located 1 mile upstream of USACE's Daguerre Point Dam.

[2] BWD, SYWD, DCMWC and WWD receive water from the Yuba Main Canal (South Canal), which begins on the south side of the Yuba River slightly upstream of the south abutment of USACE's Daguerre Point Dam.

[3] CID, HID and RWD receive water through the Hallwood-Cordua Canal (North Canal), located on the north abutment of USACE's Daguerre Point Dam.

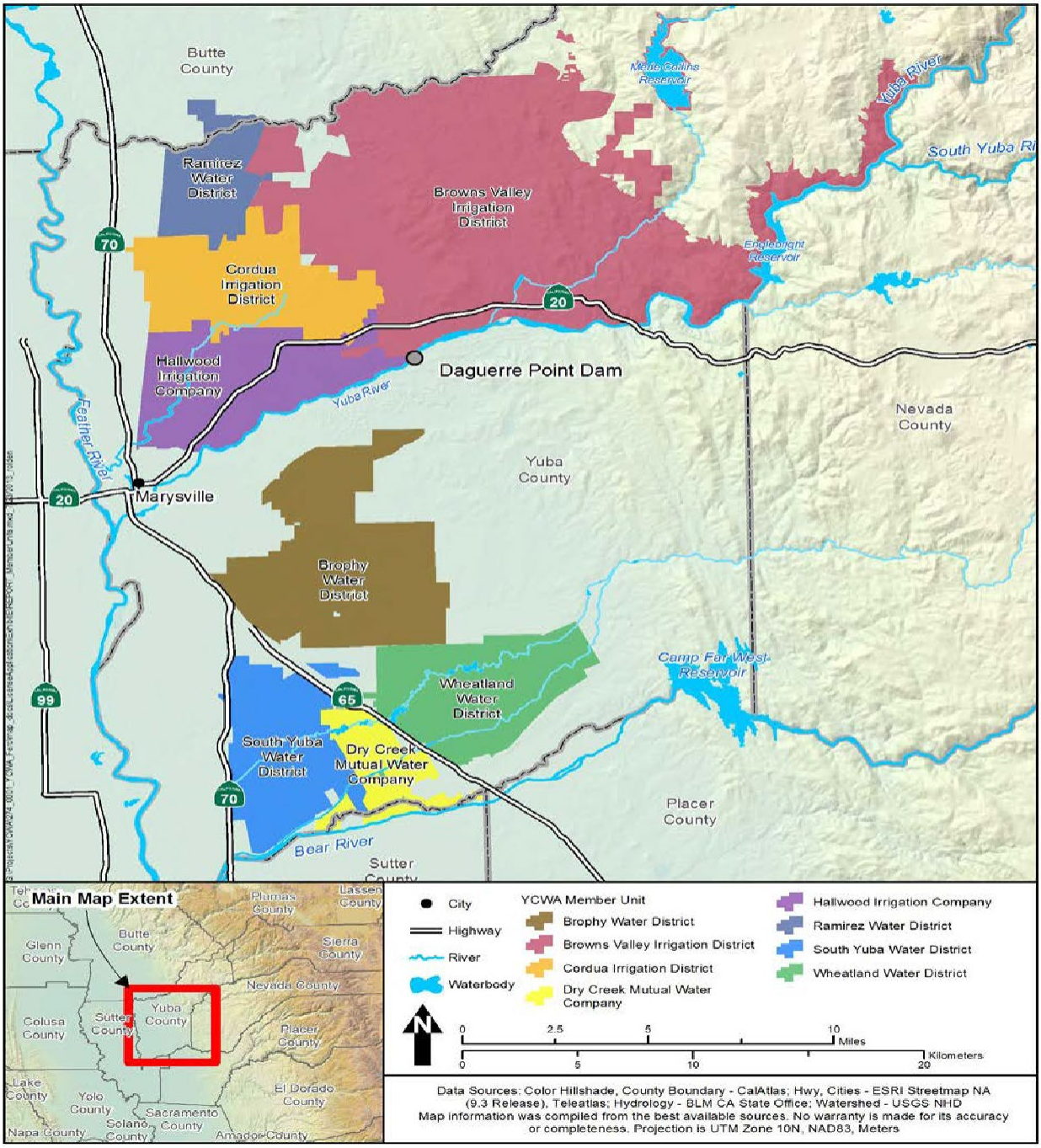

Figure 2.3-6. Yuba Water's Member Unit service areas.

Browns Valley Irrigation District (BVID) receives water at the Pumpline Diversion Facility, located 1 mile upstream of Daguerre Point Dam. Brophy Water District (BWD), South Yuba Water District (SYWD), Dry Creek Mutual Water Company (DCMWC), and Wheatland Water District (WWD) receive water from the Yuba Main Canal (South Canal), which begins on the south side of the Yuba River slightly upstream of the south abutment of Daguerre Point Dam. CID, Hallwood Irrigation Company (HIC), and Ramirez Water District (RWD) receive water through

the Hallwood-Cordua Canal (North Canal), located on the north abutment of Daguerre Point Dam. None of these facilities are under FERC's jurisdiction.

All eight of the Member Units receive contracted YRDP water supplies that are not based on their own water rights and are provided under Yuba Water's water rights. BVID, CID, and HIC have their own water rights on the Yuba River. Under water supply agreements with Yuba Water, CID and HIC receive surface water supplies as part of YRDP operations that are based on these Member Units' water rights. Dry year deficiency criteria in these contracts are different from the deficiency criteria in Yuba Water's contracts with other Member Units. Provisions in Yuba Water's water supply agreements preclude deficiencies in water right based supplies unless DWR's April forecast of unimpaired runoff as measured at the Smartsville Gage is less than 40 percent of average. No deficiencies in such deliveries may be imposed on BVID. Contract shortage provisions are presented in Table 2.3-9. Yuba Water's contract volumes are based on the gross acreage served by each Member Unit.

Table 2.3-9. Yuba Water's water supply contract shortage provisions.

Category	Trigger for Reduced Contract Allocation[1]	Percentage of Settlement/ Contract Allocation Available
PRE-1914 RIGHTS SETTLEMENT WATER RIGHT BASED SUPPLY		
Browns Valley Irrigation District	All	100%
Cordua Irrigation District	$f \geq 40\%$	100%
Hallwood Irrigation Company	$f < 40\%$	80%
YUBA WATER CONTRACT SUPPLY		
Base Project Water for Other Member Units	$f > 85\%$	100%
	$40\% < f \leq 85\%$	75%
	$f < 40\%$	Determined annually by Yuba Water in its reasonable discretion considering forecasted runoff and operational conditions.

[1] April 1 DWR forecast of unimpaired Yuba River runoff near Smartsville in percentage of 50-year average.

In 2009, Yuba Water started providing water to the WWD under a water service contract. Until then, water users within WWD relied solely on groundwater for irrigation. The Wheatland Project now conveys surface water, diverted by Yuba Water at Daguerre Point Dam, to WWD through the South Canal system.

2.3.3.3.5 Yuba Water's Water Transfers

Water transfers are an important component of Yuba Water's YRDP operations. Details of individual transfers are presented in Table 2.3-10. Stored water transfers listed in the table were made by Yuba Water from storage releases from New Bullards Bar Reservoir to meet the Yuba Accord required flows or to meet an end of September Accord target storage in New Bullards Bar Reservoir of 650,000 ac-ft. Groundwater substitution transfers are made by Yuba Water in coordination with its Member Units.

Table 2.3-10. Yuba Water historical sales from 2007 to 2022 (YCWA 2024a).

Year	WYT Sacramento Valley 40-30-30 Index	Buyer	Stored Water Transfer (ac-ft)	Groundwater Substitution Transfer (ac-ft)
2007	Dry	Yuba Accord Water Purchase Participants	65,000[1,2,3,4]	--
2008	Critical	Yuba Accord Water Purchase Participants	117,212[1]	48,875
2009	Dry	Yuba Accord Water Purchase Participants	91,100[1,2]	88,900[5]
2010	Below Normal	Yuba Accord Water Purchase Participants	74,179[1,2]	66,211
2012	Below Normal	Yuba Accord Water Purchase Participants	86,618[1,2]	--
2013	Dry	Yuba Accord Water Purchase Participants	112,544[1,2]	64,730[7]
2014	Critical	Yuba Accord Water Purchase Participants	104,663[1,2]	56,984[7]
2015	Critical	Yuba Accord Water Purchase Participants	59,131	30,000
2016	Below Normal	Yuba Accord Water Purchase Participants	60,000	--
2018	Below Normal	Yuba Accord Water Purchase Participants	76,576	16,411
2020	Dry	Yuba Accord Water Purchase Participants	43,538	77,000
2021	Critical	Yuba Accord Water Purchase Participants	130,090	--
2022	Critical	Yuba Accord Water Purchase Participants	15,077	62,400
		Total	**1,096,596**	**511,511**
		Average per Year	**78,328**	**56,835**

[1] In 2007, 2008, 2009, 2010, 2012, 2013, 2014, and 2015 BVID transferred an additional 3,100 ac-ft to the Santa Clara Valley Water District through conservation.

[2] Transfers to the Yuba Accord Water Purchase Participants include 60,000 ac-ft of stored water for the EWA.

[3] The 2007 transfer was under Yuba Accord Pilot Program. It also included 60,000 ac-ft of transfer to the EWA purchased in 2006.

[4] Sacramento Valley Index as defined in SWRCB RD-1641.

[5] In 2009, CID transferred an additional 8,322 ac-ft of groundwater substitution transfer to the DWR Drought Water Bank.

[6] In 2013, CID transferred an additional 7,774 ac-ft of groundwater substitution transfer to the DWR Drought Water Bank.

[7] In 2014, CID transferred an additional 1,976 ac-ft of groundwater substitution transfer to the DWR Drought Water Bank.

For cross-Delta water transfers to service areas south of the Delta, the Delta must be in balanced water conditions[31] and available conveyance capacity must exist at the SWP's Harvey O. Banks Pumping Plant or the CVP's C.W. "Bill" Jones Pumping Plant, both located near Tracy, CA, to convey the transfer water to willing buyers. Water transfer exports from the Delta currently may occur from July through November (YCWA 2004; NMFS 2019). Under the Yuba Accord, transfer releases can occur throughout the year as part of the releases to meet the Yuba Accord flow schedules and end- of-September target storage in New Bullards Bar Reservoir, but transfer water is generally conveyed across the Delta during the summer months.

2.3.3.3.6 Power Marketing Contracts

Yuba Water markets the electrical energy output of the YRDP and Narrows Project by scheduling the energy output of both projects into the CAISO energy markets. Yuba Water markets the capacity products of the YRDP and Narrows Project (including Resource Adequacy and Renewable Energy Credits) to Shell Energy North America through the terms of an energy marketing agreement and a standard-form (Edison Electric Institute) Master Power Purchase and Sale Agreement. All the electrical output from the Narrows Project is sold at the interconnect with the PG&E grid just outside of the Narrows 1 Powerhouse.

[31] Balanced water conditions are periods when it is agreed that releases from upstream reservoirs plus unregulated flows approximately equal the water supply needed to meet Sacramento Valley in-basin uses plus required Bay-Delta outflows and exports (USBR and DWR 1986).

2.4 Description of Yuba Water's Proposed Projects under New FERC Licenses

2.4.1 Proposed YRDP under New FERC License

In addition to the continued O&M of the existing YRDP facilities described in Section 2.3, the YRDP Relicensing Project includes:

1. Project-related changes proposed by Yuba Water and accepted by FERC staff in the FEIS;

2. FERC staff-recommended modifications of Yuba Water's proposal and additional measures;

3. Implementation of the USFS's December 2, 2022 Revised Final FPA Section 4(e) Terms and Conditions for the YRDP (Section 4(e) Conditions);

4. Implementation of Yuba Water's recommended findings for 2025 CWA Section 401 WQC Conditions for the new YRDP FERC license that were submitted for consideration to the SWRCB on December 30, 2024;

5. FERC Form L-5 Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States; and

6. Implementation of protective measures for ESA-listed species under the jurisdictional authority of the USFWS, as described in the USFWS's June 21, 2018 letter of concurrence.

This section describes: (1) the proposed YRDP facilities (Section 2.5.5.1.1); (2) the proposed FERC Project Boundary for the YRDP (Section 2.5.5.1.2); (3) proposed Yuba Water changes to conditions in the existing FERC license for the YRDP (Section 2.5.5.1.3); (4) FERC Staff Alternative modifications to Yuba Water's proposal (Section 2.5.5.1.4); (5) FPA Section 4(e) Conditions (Section 2.5.5.1.5); (6) FERC Form L-5 Terms and Conditions (Section 2.5.5.1.6); (7) ESA Section 7 consultation status (Section 2.5.5.1.7); (8) Yuba Water's proposed WQC conditions for the YRDP (Section 2.5.5.1.8); and (9) a summary of the YRDP's proposed implementation plans that were developed during the FERC relicensing process (Section 2.5.5.1.9).

2.4.1.1 Proposed YRDP Facilities

Yuba Water does not propose to add to the YRDP any previously constructed, unlicensed water power structures or facilities.

2.4.1.1.1 Power Generation Facilities

New Colgate Powerhouse New Tailwater Depression System

Proposed Facilities

Yuba Water proposes to add to the YRDP a new Tailwater Depression System (TDS) at the New Colgate Powerhouse.

The New Colgate Powerhouse generators are driven by six-jet, vertical-shaft Pelton wheel turbines. The turbine runners rotate in the air of the turbine discharge chambers where water can fall freely off the turbine buckets. When the water level in the turbine discharge chamber rises, the foam and backsplash cause uneven resistance to free rotation with resulting vibration. Consequently, the rate of water release must be reduced, and at high stages, the operation of the turbines must cease.

The water level in the turbine discharge chambers rises as the water level in the Yuba River rises during flood events. The flood runoff can come from spillway releases at New Bullards Bar Dam, unregulated flow downstream of the dam, and the Middle Yuba River. Above certain water levels at the powerhouse, when Yuba River flow upstream of the New Colgate Powerhouse reaches approximately 17,000 cfs, which corresponds to a WSE of about 558.5 ft, the New Colgate Powerhouse must be shutdown, and at flows as low as 11,000 cfs the New Colgate Powerhouse releases must be reduced to prevent excessive vibration. Besides affecting generation, this reduces the ability to move water, which could encroach upon the available flood storage space in the reservoir. For example, if the New Colgate Powerhouse were totally shut down for 72 hours prior to and during a period of peak flood inflow to New Bullards Bar Reservoir, there would be a loss of over 20,000 ac-ft of useable storage.[32]

The proposed TDS would introduce compressed air into the turbine discharge chamber to lower the tailwater elevation to a level that does not interfere with turbine operation, thereby allowing continued turbine operation during high flows. The TDS would thus enhance the ability to regulate flood releases from New Bullards Bar Reservoir and increase the production of energy.

Proposed Operations

The proposed TDS would only operate during high flow events, when the combined releases from New Bullards Bar Dam and flows from the Middle Yuba River would otherwise preclude New Colgate Powerhouse operations. When the WSE of flows in the New Colgate Powerhouse tailrace rises to an elevation of 555 ft, which corresponds to approximately 11,000 cfs of flow upstream of the New Colgate Powerhouse, the first compressor would be started, and would be modulated to fully open as needed. The second compressor would be started when the WSE in the tailrace reaches an elevation of 556 ft (having been lowered by the first compressor startup) and would be modulated to fully open, as needed. If necessary, the third compressor would be started when water level inside the tailrace conduit again reaches an elevation of 556 ft. Modulation of each compressor would maintain a WSE in the tailrace within a range of 554 ft and 556 ft. If only one unit is running, compressed air will still be discharged into both units. If the tailwater elevation

[32] The outlet into New Colgate Tunnel is below the level of the spillway lip, which allows for releases in advance of any limits in flood operation regulations.

continues to rise above elevation 556 ft with all three compressors operating at maximum pressure, plant operators would either reduce unit load or shut the units down. As the tailwater recedes, the compressors would be shut down in reverse sequence to their startup, as the tailrace elevation drops to elevations below 556 ft. Typical duration of operation of the proposed TDS is expected to be less than or equal to the historical duration of spills at New Bullards Bar Dam, which occurs an average of approximately 21 days per year.

The compressors have been sized to allow the plant to operate under flows similar to those observed in the January 1997 flood event where the maximum river stage at the New Colgate Powerhouse was at an elevation of 578 ft. The powerhouse has been assessed as being "flood proof" for a maximum tailwater elevation of 583 ft (YCWA 2004). There were 16 generation curtailment events between 1971 and 2016 (YCWA 2002) that would have benefited from the TDS. The cumulative loss of power generation during these 16 events was nearly 250,000 MWh, or approximately 5,560 MWh per year.

Addition of the proposed TDS would have an effect on New Bullards Bar Reservoir operations during flood operations. The proposed TDS would increase New Bullards Bar Reservoir release capacity during flood events when spillway capacity is limited by allowing the New Colgate Powerhouse to continue to operate during high flow events through the injection of compressed air into the New Colgate Powerhouse tailrace when the stage of the Yuba River would otherwise prevent generation. Operating the proposed TDS throughout a flood event would allow for increased releases from New Bullards Bar Reservoir, thus reducing New Bullards Bar Reservoir storage during the flood event, and ultimately reducing the peak flood release. Other than allowing the New Colgate Powerhouse to operate during high flow events, the proposed TDS would not affect YRDP operations.

The proposed TDS would include oil containment structures around the base of the air compressors capable of capturing the entire volume of oil in the system, and a condensation system for removing oil mist from the compressed air before it is introduced into the turbine chamber.

Proposed Construction

The anticipated total duration of the construction would be 5 months, commencing after issuance of a new license from FERC, detailed design, approval of detailed construction plans and acquisition of any additional required permits. It is anticipated that the work would not require a separate outage and could be accomplished during planned outages. Key activities would include the following:

- Site preparation at powerhouse yard and deck, including construction of equipment foundations and relocation of the New Colgate Powerhouse pedestrian bypass
- Installation of blowers, pipe supports, roofing, air piping and valves
- Installation of power supply, including the tap of the 13.8-kv isolated phase bus, transformer, switchgear and cables to the blowers
- Procurement and installation of turbine shaft seals
- Curtain wall modifications
- Installation of bulkhead shaft seal

- Installation of instrumentation and controls
- System testing and startup including construction and removal of temporary test barrier. All work would occur within the proposed FERC Project Boundary for the YRDP.

The construction labor force is estimated to average about 12 persons over the total construction period. Equipment would be transported to the powerhouse via Highway 20, Marysville Road, and Lake Francis Road, all of which are paved and suitable for the anticipated loads. It is anticipated that not more than 30 trailer ("low boy") truck roundtrips would be required to bring the blower skids, transformer, other electrical gear, pipe, structural steel and other heavy materials and equipment. About 15 to 20 truckloads of ready-mixed concrete may be needed for equipment pads, foundations and curbs. No changes in road conditions are anticipated as a result of the work.

At the site, typical heavy construction equipment would include an excavator (backhoe), an air compressor, one or two trucks, two truck-mounted cranes, pickup trucks, a construction office trailer and miscellaneous equipment. Smaller equipment would include hoists and platforms, concrete placing and drilling equipment, a welding machine, pipe fitting equipment, and other miscellaneous equipment customary to the electrical, mechanical and structural crafts.

No borrow areas are anticipated to be required because the work does not entail significant earthwork. It is expected that the available space within the fenced plant area would be sufficient for laydown and staging of materials and equipment. All work would be confined to the powerhouse, yard and immediate vicinity. No undisturbed areas are anticipated to be disturbed as a result of the work.

2.4.1.1.2 Non-Generation Facilities

New Bullards Bar Dam Auxiliary Flood Control Outlet (i.e., ARC Spillway)

As described in Yuba Water's Application for New License (YCWA 2014), the 2017 AFLA and FERC's (2019) FEIS, Yuba Water proposes to construct, operate and maintain a new auxiliary flood control outlet (now renamed the ARC Spillway) that would allow releases from New Bullards Bar Dam to occur when the WSE in New Bullards Bar Reservoir is below the existing New Bullards Bar spillway in anticipation of large storm events. The new auxiliary flood control outlet would increase the existing release capacity of New Bullards Bar Dam during high-flow events to improve flood management and to enhance public safety for Yuba and Sutter counties. Once constructed, the ARC Spillway and its related flood control operations will be a new operational component of the new FERC license that has not historically been part of the YRDP and is not part of the existing FERC license (unless FERC decides to issue an amendment order adding the ARC Spillway to the existing license in response to Yuba Water's 2025 application for a non-capacity amendment,[33] which could occur sooner than waiting until the new FERC license for the YRDP Relicensing is issued).

When Yuba Water submitted the 2014 FLA and subsequent 2017 AFLA to FERC, Yuba Water expected and planned that FERC would have issued a new license for the YRDP by the time that Yuba Water was ready to construct the ARC Spillway. Therefore, construction and operation of

[33] Available in FERC's eLibrary at Accession No. 20250131-5499 (Filed on January 31, 2025).

the ARC Spillway were included in the FERC license application. Since the FERC (2019) FEIS was completed, pre-construction design and permitting work on the ARC Spillway has progressed, some of the construction- and operations-related components have changed, and Yuba Water is ready to proceed with the ARC Spillway Project. Because the ARC Spillway would provide significant public benefits and because of the uncertainty regarding when the new license for the YRDP Relicensing Project will be issued, Yuba Water proposes to add the new ARC Spillway under the existing FERC license rather than wait until the new FERC license is issued. It has become apparent that the schedule of events planned in 2014/2017 have not occurred as expected, Yuba Water determined that it was necessary for the ARC Spillway Project to proceed ahead of relicensing. Because the ARC Spillway will be part of the YRDP, the project construction and operation of the ARC Spillway requires FERC approval.

In consideration of the substantial public benefit that the ARC Spillway would have and because of the uncertainty regarding when FERC will issue a new license for the YRDP, on January 31, 2025, Yuba Water filed an application for non-capacity related amendment to the existing FERC license to authorize the ARC Spillway Project. Even though FERC (and USACE) evaluated a new secondary spillway in the 2019 FEIS, FERC staff requested that Yuba Water include in its Application for Amendment an applicant-prepared draft environmental assessment (APDEA) that focused solely on the new ARC Spillway and anticipated changes under the existing FERC license. In response, Yuba Water prepared and included an APDEA in its Application for Amendment.

Yuba Water also undertook a separate process of complying with CEQA for the ARC Spillway Project. On December 17, 2024, Yuba Water certified a Final EIR for the ARC Spillway Project (YCWA 2024b) that fully analyzed construction-related and O&M impacts of the ARC Spillway.[34]

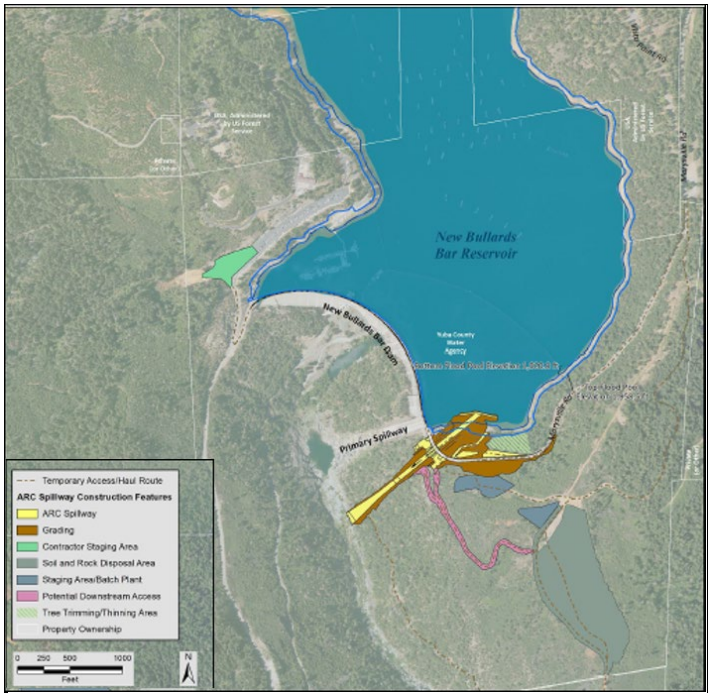

Figure 2.4-1. ARC Spillway proposed construction areas and access (YCWA 2023b).

Figure 2.4-1 shows an overview of the ARC Spillway components. For the ARC Spillway, a new approximately 0.35-mile access road to the spillway chute would be constructed necessitating the addition of approximately 1.2 ac to the FERC Project Boundary for the YRDP (YCWA 2025).

As described and evaluated in the ARC Spillway Project DEIR (YCWA 2023b), releases from the ARC Spillway would be made in anticipation of large storms to provide increased evacuated storage capacity in New Bullard's Bar Reservoir prior to and during high-precipitation events and large storm peak inflows to reduce the peak outflow. The ARC

[34] https://ceqanet.opr.ca.gov/2020110163/6

Spillway would operate conjunctively with the Primary Spillway and New Colgate Powerhouse to meet New Bullards Bar Dam overall target releases. Yuba Water's (2023b) analysis of the ARC Spillway determined that the addition of the ARC Spillway to the YRDP would have no effect on flow requirements in the existing FERC license, nor would it have any effect on the flow requirements that are anticipated to be in the new license (YCWA 2023b). Yuba Water previously identified and adopted mitigation measures (including one mitigation measure requested by the SWRCB) to reduce the water quality impacts associated with ARC Spillway operations to less than significant. These previously adopted mitigation measures for ARC Spillway operations have been incorporated into the YRDP Relicensing Project, and will continue to apply to ARC Spillway operations under the Proposed Projects.

ARC Spillway operations are being considered as part of the YRDP Relicensing Project that is characterized in this DEIR because it was addressed in FERC's (2019) FEIS and it is expected to be a component of the long-term operation of the YRDP that is described in the new FERC license. As described in the ARC Spillway Project DEIR (YCWA 2023b), "*it is assumed that all requirements that apply to YRDP-licensed facilities under the existing FERC license would apply to operation and maintenance of the ARC Spillway, including all requirements and management plans (e.g., Erosion Control, Integrated Vegetation, etc.)*." Anticipated flood management operations associated with the ARC Spillway have been incorporated, as appropriate, into the assumptions that are used to characterize the cumulative hydrologic modeling simulations[35] that represent the Proposed Projects that are evaluated in this DEIR. Once completed, the ARC Spillway and associated facilities/areas would be incorporated into the YRDP under FERC's jurisdiction and regulated by under the FPA.

Modifications to Our House Diversion Dam and Log Cabin Diversion Dam Fish Release Outlets

Proposed Facilities

Yuba Water proposes to change minimum flows on the Middle Yuba River downstream of Our House Diversion Dam from the requirement in the existing license of 30 - 50 cfs to 40 - 120 cfs, and to change minimum flows on Oregon Creek downstream of Log Cabin Diversion Dam from the requirement in the existing license of between 8 - 12 cfs to 6 - 43 cfs (YRDP Proposed Condition AR1, *Maintain Minimum Streamflows Below Our House Diversion Dam and Log Cabin Diversion Dam)* (YCWA 2017a). Further, Yuba Water proposes to include in the new license a requirement to control spill at Our House Diversion Dam by releasing up to 600 cfs (YRDP Proposed Condition AR2, *Control Project Spills at Our House Diversion Dam)* (YCWA 2017a), and to control spill at Log Cabin Diversion Dam by releasing up to 100 cfs (YRDP Proposed

[35] Yuba Water flood management operations of anticipatory releases through the ARC Spillway or flood management-related releases when storage is below the USACE flood reservation space are included in modeling of the cumulative condition. Future operations of the ARC Spillway were determined based on a number of real-time factors, including upstream snow-pack and forecasted storm intensity that are not included in the Operations Model. Modeling of the YRDP to augment the existing New Bullards Bar Dam spillway capacity indicates the ARC Spillway could be used each time New Bullards Bar Reservoir spill operations are needed, but the existing capacity is adequate for all low-to-medium intensity storm events so the release from the dam can be made through either outlet. The cumulative condition modeling results show that the ARC Spillway additional release capacity and release capacity at a lower water-surface elevation would only be needed during very large storm events, or in roughly 12 out of 52 years. Any pre-emptive releases associated with the Forecast-Informed Reservoir Operations (FIRO) program would likely be made using the ARC Spillway in even fewer occurrences than the 12 in 52 years. Other than reducing the peak flow rate during storms, or shifting the peak release to an earlier time, the ARC Spillway would not affect YRDP operations.

Condition AR12, *Control Project Spills at Log Cabin Diversion Dam)* (YCWA 2017a). The proposed flows would exceed the capabilities of the existing fish release outlets (i.e., maximum existing valve capacities are 59 cfs at Our House Diversion Dam and 18 cfs at Log Cabin Diversion Dam). Yuba Water proposes to increase the capacity at each of these outlets to accommodate the new requirements.

At Our House Diversion Dam, a 68-in. diameter outlet pipe with control valve is proposed to be installed at the same invert elevation as the existing fish release outlet. At Log Cabin Diversion Dam, a 38-in. diameter outlet pipe with control valve is proposed to be installed at the same invert elevation as the existing fish release outlet. The new 68-in. diameter outlet at Our House Diversion Dam is expected to result in an outlet capacity of 611 cfs at minimum head (i.e., upstream water level at tunnel invert elevation of 2015.0 ft); the new 38-in. diameter outlet at Log Cabin Diversion Dam is expected to result in an outlet capacity of 106 cfs at minimum head (i.e., upstream water level at tunnel invert elevation of 1952.0 ft). The existing fish release outlets at Our House and Log Cabin diversion dams would remain in place and be able to release at the existing capacities (i.e., 59 and 18 cfs, respectively). The new fish release outlets at the dams would not affect the existing low-level outlets at the dams.

Proposed Operations

Yuba Water anticipates that the new low-level outlets would only be used to provide for controlled releases from the dams in excess of the existing fish release valves. The modifications would not result in added power generation to the YRDP. YRDP Proposed Condition AR1 includes new flow requirements for the Middle Yuba River downstream of Our House Diversion Dam and for Oregon Creek downstream of Log Cabin Diversion Dam. The required flow would be determined by the applicable Smartsville Hydrologic Index WYT. Table 2.4-1 and Table 2.4-2 show the proposed monthly required flows for the Middle Yuba River and Oregon Creek, by WYT, as included in YRDP Proposed Condition AR1. As required by USGS (Article 8 of FERC's Form L-5, Standard Articles), Yuba Water also would record streamflow at all of the gages listed in Table 2.4-1 and Table 2.4-2.

Table 2.4-1. Proposed YRDP flow requirements (in cfs) for Middle Yuba River downstream of Our House Diversion Dam by Smartsville Hydrologic Index WYT.

Month	Wet Water Year[1]	Above Normal Water Year[1]	Below Normal Water Year[1]	Dry Water Year[1]	Critically Dry Water Year[1]
October 1 – 31	60	60	55	50	40
November 1-30	60	60	55	50	40
December 1 - 31	70	60	55	50	40
January 1 - 31	90	75	70	50	40
February 1- 29	90	75	70	50	40
March 1 - 31	100	90	80	55	45
April 1 - 30	120	100	90	70	60
May 1- 31	120	100	90	70	60
June 1 - 30	120	100	90	70	60
July 1 - 31	100	80	70	60	45
August 1 - 31	80	70	60	50	45
September 1- 30	70	60	55	50	45

Source: YCWA 2017a as cited in FERC 2019

[1] Or natural inflow if natural inflow is less.

Table 2.4-2. Proposed YRDP flow requirements (in cfs) for Oregon Creek downstream of Log Cabin Diversion Dam by Smartsville Hydrological Index WYT.

Month	Wet Water Year[1]	Above Normal Water Year[1]	Below Normal Water Year[1]	Dry Water Year[1]	Critically Dry Water Year[1]
October 1 – 31	8	8	6	6	6
November 1-30	17	15	15	10	6
December 1 - 31	17	15	15	10	6
January 1 - 31	17	15	15	10	6
February 1- 29	24	19	18	12	12
March 1 - 31	30	30	18	12	12
April 1 - 30	43	43	27	18	18
May 1- 31	43	43	27	18	18
June 1 - 30	43	43	27	18	18
July 1 - 31	25	20	15	10	6
August 1 - 31	13	10	8	6	6
September 1- 30	13	10	8	6	6

Source: YCWA 2017a as cited in FERC 2019

[1] Or natural inflow if natural inflow is less.

Proposed Construction

All work would occur within the proposed FERC Project Boundary, where temporary facilities and laydown/staging locations are available adjacent to each site. The work would occur during late summer when the minimum flow release from each dam is generally low and equal to inflow into the impoundment. Yuba Water would open the low-level outlet to allow the WSE in the impoundment to drop below the intake to the fish release outlet. A crane would be brought on-site and used to install temporary construction platforms and needed formwork for concrete modifications and installation of the new civil work. A new upsized fish release pipe and associated valve system would be installed at each facility, with the centerline of the new pipe at the same centerline elevation as the existing fish release outlet (i.e., no disturbance to the existing fish release outlet). The concrete facilities needed at the inlets and outlets of the new fish release outlets would be similar to those for the existing fish release outlets, upsized for the larger pipes accordingly. The penetration through the dams for the new fish release outlets would be achieved by coring multiple small diameter overlapping bores through the dam to form a circular opening large enough to accommodate the new outlet pipe and associated localized structural reinforcement

rebar and plating. At the new fish release inlets, conical transition and stop-log slots would be installed; at the outlets, valve support platforms and valve stem guides would be constructed.

The construction labor force is estimated to average about 10 persons over the total construction period. Equipment would be transported to the diversion tunnel via Highway 20, Marysville Road, and Highway 49, all of which are paved and suitable for the anticipated loads. It is anticipated that not more than 10 trailer ("low boy") truck roundtrips would be required to bring the mechanical, electrical and other heavy materials and equipment to the project site. No more than 20 truckloads of ready-mixed concrete may be needed for equipment supports and foundations. No changes in road conditions are anticipated as a result of the work.

At the sites, typical heavy construction equipment would include a crane, a concrete coring machine, air compressors, dump trucks, heavy-duty trucks, a floating barge, and miscellaneous equipment. Smaller equipment would include hoists and platforms, scaffolding, concrete placing and drilling equipment, a welding machine, and other miscellaneous equipment customary to the electrical, mechanical and structural crafts.

No borrow areas are anticipated to be required because the work does not entail significant earthwork. For construction at the Log Cabin Dam, it is expected that the available space on the access roads to the dam areas would be sufficient for laydown and staging of materials and equipment. For construction at the Our House Dam, it is expected that the available space to the northeast, adjacent to the river-right abutment to the dam would be sufficient for laydown and staging of materials and equipment. For both sites, all work would be confined to the dam outlet area and immediate vicinity. No undisturbed areas are anticipated to be disturbed as a result of the work at either site.

It is currently anticipated that environmental compliance and permitting would take a total of 6 months for each diversion dam and the design would occur concurrently with permitting. Actual field construction would take no more than six months. While each site can be modified concurrently, the total time for these two activities is estimated to be two years. Additional information about construction is described in **Appendix 2A-3**.

Modifications to Lohman Ridge Diversion Tunnel Intake

Proposed Facilities

Yuba Water proposes to periodically close the Lohman Ridge Diversion Tunnel on the Middle Yuba River (YRDP Proposed Condition AR11, *Periodically Close Lohman Ridge Diversion Tunnel)* (YCWA 2017a). There is an existing gate on the tunnel intake, but it is not appropriate for closing and opening the tunnel during high flows. Yuba Water proposes to replace the gate with a more efficient gate structure.

Inlet modifications necessary to add a new regulating gate and relocate the existing bulkhead gate would require the following activities:

- Extending the deck and approach walls of the existing inlet upstream 4 to 5 ft
- Constructing a hoist deck to achieve gate and bulkhead lift clearances

- Modifying the existing bulkhead slot to accommodate a regulating gate
- Constructing a new bulkhead slot within the new inlet extension
- Constructing a new trash rack and debris rake at the front of the extended inlet

The inlet extension would be constructed much like the existing inlet (i.e., made of concrete). Based on using a screw-drive for regulating the gate and a wire rope hoist for the bulkhead gate, both hoists would be located on a raised platform approximately 17 ft above the inlet deck elevation or approximately 5 to 6 ft above the current upper access road elevation. Locating the hoists at this elevation allows for both gates to be lifted fully above the current deck for maintenance and inspection. A debris rake would be added to the inlet deck just above the trash rack.

Proposed Operations

Yuba Water proposes to periodically close the Lohman Ridge Diversion Tunnel (YRDP Proposed Condition AR11) during wetter water years and when there is sufficient storage in New Bullards Bar Reservoir to meet water management objectives. Yuba Water anticipates that the new Lohman Ridge Diversion Tunnel Intake Gage would be used to open or close the Lohman Ridge Diversion Tunnel from October 1 through 31 if the water year is wet, above normal, or below normal and New Bullards Bar Reservoir storage is 600,000 ac-ft or more. All water would flow down the Middle Yuba River during closures. If May is a wet, above normal or below normal water year (defined in YRDP Proposed Condition WR2) and the subsequent end-of-September New Bullards Bar Reservoir storage is 600,000 ac-ft or greater, Yuba Water would fully close the Lohman Ridge Diversion Tunnel from October 1 through December 31 of that calendar year.

Yuba Water would also close the Lohman Ridge Diversion Tunnel if the forecast for a wet water year and storage at New Bullards Bar Reservoir storage is 775,000 ac-ft or more at the end of March. If the end-of-March New Bullards Bar Reservoir storage is 775,000 ac-ft or greater and the subsequent April is a wet water year (defined in Yuba Water's YRDP Proposed Condition WR2), Yuba Water would close the Lohman Ridge Diversion Tunnel within two business days of publication of DWR's April Bulletin 120, and it would remain fully closed through September 30 of that calendar year. Concurrent with the Lohman Ridge Diversion Tunnel closure, Yuba Water would open the low-level outlet and fish release valve at Log Cabin Diversion Dam, but it may leave the Camptonville Diversion Tunnel fully open (FERC 2019).

Proposed Construction

All work would occur within the proposed FERC Project Boundary, where temporary facilities and laydown/staging locations are available adjacent to the site. The work would occur during late summer when the minimum flow releases are low and equal to inflow into the impoundment. Yuba Water would open the low-level outlet to allow the WSE in the impoundment to drop below the intake to the diversion tunnel. A crane would be brought on-site and used to install temporary construction platforms and needed formwork for concrete modifications and installation of the new civil work. A new inlet control gate and debris rake would be installed. Penetrations through the existing tunnel inlet deck for the new gate and debris rack would be developed using concrete drilling and cutting tools. Mechanical and electrical control devices would be installed on the tunnel inlet deck.

The construction labor force is estimated to average about eight persons over the total construction period. Equipment would be transported to the diversion tunnel via Highway 20, Marysville Road, and Highway 49, all of which are paved and suitable for the anticipated loads. It is anticipated that not more than 10 trailer ("low boy") truck roundtrips would be required to bring the mechanical, electrical and other heavy materials and equipment to the project site. No more than five truckloads of ready-mixed concrete may be needed for equipment pads and foundations. No changes in road conditions are anticipated as a result of the work.

At the site, typical heavy construction equipment would include an excavator (backhoe), an air compressor, a heavy-duty truck, a truck-mounted crane and miscellaneous equipment. Smaller equipment would include hoists and platforms, concrete placing and drilling equipment, a welding machine, and other miscellaneous equipment customary to the electrical, mechanical, and structural crafts.

No borrow areas are anticipated to be required because the work does not entail significant earthwork. It is expected that the available space within the tunnel intake area would be sufficient for laydown and staging of materials and equipment. All work would be confined to the tunnel intake and immediate vicinity. No undisturbed areas are anticipated to be disturbed as a result of the work.

It is currently anticipated that environmental compliance and permitting would take a total of six months and the design would occur concurrently with permitting. Actual field construction would take no more than six months. The total time for these activities is estimated to be no longer than 18 months.

2.4.1.1.3 YRDP Recreation Facilities

YRDP recreation facilities include existing facilities and new facilities that either are, or would be, part of the YDRP and would be part of the new FERC license, as described in Yuba Water's YRDP Proposed Condition RR1, *Recreation Facilities Plan* (YCWA 2017a). Yuba Water proposes several enhancements to the existing YRDP recreation facilities. When constructing new YRDP recreation facilities, Yuba Water would obtain all necessary permits and approval for survey work, facility design and on-site resource evaluations, including USFS permits for work on NFS land.

A summary of these enhancements is provided below. Additional details may be found in the following appendices to this DEIR:

- Site-specific characterization of existing campgrounds and other recreation facilities, including representative photographs (Appendix 2A-1).
- Existing campground and recreation facility locations are identified on various YRDP relicensing maps (Appendix 2A-5).

- Site plans for existing facilities are provided in the Recreation Facilities Plan (Appendix 2B-14).
- Construction schedules for recreation facilities and for roads are described in the Recreation Facilities Plan and in the Transportation System Management Plan (Appendix 2B-17).

Campgrounds

Schoolhouse Campground (NFS Lands)
This facility is scheduled for major rehabilitation[36] in License Year 10. Yuba Water would provide the following enhancements:

- A standardized four-panel entrance station kiosk (License Year 1).[37]
- Appropriate trailhead signage on the facility entrance sign (License Year 1).
- Replacement of existing vault and flush restroom buildings with new restroom buildings, including septic systems (License Year 2).
- Conversion of all the double and triple campsites into single campsites, except for campsite #9 (double site), which would be separated into two single sites (for a total of 57 sites) (License Year 10).
- Expand and formalize the existing overflow parking area to provide a single, paved and striped parking area with 10 vehicle plus trailer spaces and 15 single vehicle spaces that would serve both campground overflow and trailhead parking needs (License Year 10).
- Construct native surface, non-motorized, multi-use connector trail to Schoolhouse Trail from the trailhead parking area (License Year 10).
- Construct a 50-person capacity amphitheater across the road from the campground overflow and trailhead parking area with bench seating, a large group fire ring and an electrical hookup (License Year 10).
- Install electricity at the entrance station, host site, and each restroom (License Year 10).
- Upgrade the host site with water and electric hookups and a holding tank (License Year 10).
- Install a shower building or buildings with a total of four shower stalls (License Year 10).
- Upgrade the campsite vehicle spurs to accommodate recreational vehicles (RVs) as outlined in Table 3.3-1 of Yuba Water's *Recreation Facilities Plan* (see Appendix 2B-14) (License Year 10).

[36] Information on design standards and guidance for activities associated with major rehabilitation of recreation facilities is provided in Section 3.2 of Yuba Water's Recreation Facilities Plan (see Appendix 2B-14).

[37] The scheduling (years) in Yuba Water's Recreation Facilities Plan (see Appendix 2B-14) use "License Years," with "License Year 1" designating the first full calendar year in which the new license is effective.

- Install RV hookups (water and electric only) at 10 existing campsites (License Year 10).
- Upgrade the existing campground circulation roads to accommodate RVs up to 45 ft in length as outlined in Table 3.3-2 of the Recreation Facilities Plan (see Appendix 2B-14). These upgrades would only be completed if they do not require significant re-designing of the existing circulation roads and do not reduce the total number of existing campsites (License Year 10).

Dark Day Campground (NFS Lands)
This facility is scheduled for major rehabilitation in License Year 6. Yuba Water would provide the following enhancements:

- Install a standardized four-panel entrance station kiosk (License Year 1).
- Replace the two-unit vault restroom building that serves Campsites 5 through 10 with a new vault restroom (License Year 2).
- Maintain facility for tent camping only (License Year 7).
- Provide vegetative screening between campsites (License Year 7).
- Improve each campsite that does not comply with current accessibility standards and guidelines (License Year 7).
- Install a one-unit vault restroom at Campsite #4 (License Year 7).
- Replace the two-unit vault restroom building that serves double campsites (Sites #1 through #3) with an efficient two-unit flush model if the site terrain allows for a leach field. If a flush model is not feasible, then replace with a vault model (License Year 7).

Hornswoggle Group Campground (NFS Lands)
This facility is scheduled for major rehabilitation in License Year 11. Yuba Water would provide the following enhancements:

- Install a standardized four-panel entrance station kiosk (License Year 1).
- Replace the existing four-unit flush restroom buildings at the Manzanita and Madrone campsites with efficient two-unit flush models including appropriate septic systems (License Year 2).
- Replace the existing two-unit vault restroom at the Sugarpine campsite with a one-unit vault model (License Year 2).
- Replace the existing two-unit vault restroom at the Douglas Fir campsite with an efficient one-unit flush model (including appropriate septic system) (License Year 5).
- Install efficient one-unit flush restroom buildings including appropriate septic system at Dogwood and Ponderosa campsites (1 each where restroom buildings do not currently exist) (License Year 5).
- Install a shower building or buildings with a total of 4 shower stalls (License Year 5).

- Reconfigure turning radii of each existing group campsite spur road to accommodate RVs up to 45-ft-long at all the group campsites, except Site No. 4 (Ponderosa). Site No. 4 (Ponderosa) would be designated with an RV size limit (exact limit to be determined), which includes signage at the campsite and the facility entrance information kiosk, as well as a disclosure about the size limit at this particular site through the USFS reservation system at the time of reservation (License Year 5).
- Improved turning radii of each existing group campsite spur road to accommodate RVs up to 45-ft-long at all the group campsites, except Site No. 4 (Ponderosa), where an RV size limit would be implemented (License Year 5).
- Expand the capacity by one group campsite (25-person capacity), including a paved parking area, one-unit vault restroom, and group camping area with picnic tables, food lockers, fire ring and a pedestal grill (License Year 5).
- Provide electricity at the entrance kiosk/information board and each restroom (License Year 5).

Cottage Creek Picnic Area (NFS and Yuba Water Land)

Yuba Water would complete the second phase of the facility reconstruction on the eastern portion of the campground that was severely burned in the 2010 fire once the area has been sufficiently re-vegetated, based on an average tree height of 20 ft for trees in the replanted area). For planning purposes, Yuba Water scheduled the second phase of development in License Year 2 unless the work was completed under the existing license or Yuba Water and the USFS determine that development is premature due to the re-vegetation status. The development would consist of four additional small group campsites with the following specifications:

- A total of four additional campsites, including two double campsites and two triple campsites each with a paved vehicle spur and a living space and the following additional specifications:
    - Double campsites would consist of a paved vehicle spur with 2 single vehicle spaces and 2 RV camping spaces; and a living space with 1 group-sized fire ring, 2 food lockers, 2 picnic tables and 2 tent pads.
    - Triple campsites would consist of a paved vehicle spur with 3 single vehicle spaces and 3 RV camping spaces; and a living space with 1 group-sized fire ring, 3 food lockers, 3 picnic tables and 3 tent pads.
- A potable water system extension from the existing system consisting of underground distribution and water hydrants.
- A two-unit vault restroom building.
- A paved circulation road with vehicle barriers.
- Trash facilities, including a dumpster and recycling receptacles.

- A standardized four-panel entrance station kiosk, if not installed under the first phase (initial license).
- A two-panel interpretive display at a location with the best view down canyon within the facility.

Garden Point Boat-in Campground (NFS Lands)
This facility is scheduled for major rehabilitation in License Year 11. Yuba Water would provide the following enhancements:

- Install a standardized four-panel entrance station kiosk (License Year 1).
- Install a one-panel interpretive display that includes information about the gold mining history in the Yuba River drainage and the North Yuba River/Bullards Bar area (License Year 1).
- Install animal-resistant food lockers (at least 30 ft^3) at each site if not done prior to new license (License Year 1).
- Replace the existing (2) one-unit and (1) two-unit vault restroom buildings with new vault models with the most efficient configuration of one- and/or two-unit restroom buildings based on campsite locations (License Year 2).
- Expand the site capacity by at least seven new single campsites to replace lost capacity with the closure of Frenchy Point Campground (License Year 11).
- Install additional restroom building(s) to meet the needs of the final number of new campsites developed with the most efficient configuration of one- and/or two-unit restroom buildings based on campsite locations (License Year 11).
- Provide solar-powered lighting at the entrance station kiosk (License Year 11).
- Remove Klamath stove facilities and concrete bases (License Year 11).

Madrone Cove Boat-in Campground (NFS Lands)
This facility is scheduled for major rehabilitation in License Year 11. Yuba Water would provide the following enhancements:

- Install a standardized four-panel entrance station kiosk (License Year 1).
- Install a one-panel interpretive display that includes information about the gold mining history in the Yuba River drainage and the North Yuba River/Bullards Bar area (License Year 1).
- Install animal-resistant food lockers (at least 30 ft^3) at each site if not done prior to new license (License Year 1).
- Replace the existing vault restroom with a new vault model – evaluate the size, design and location of the new vault toilet (License Year 2).
- Improve the facility to meet the needs of the users (e.g., redevelopment from a family campground to a group campground) (License Year 11).

- Replace campsite retaining walls with durable materials (License Year 11).
- Provide solar-powered lighting at the entrance station kiosk (License Year 11).
- Remove old Klamath stove facilities and concrete bases (License Year 11).

Frenchy Point Boat-in Campground (NFS Lands)
During License Year 1, Yuba Water would decommission the facility due to low use caused by difficult (very steep) access conditions. Yuba Water would remove the remaining site facilities and restore the site to conditions satisfactory to the USFS. Once decommissioned, the site would no longer be used as a dispersed shoreline camping area.

Day Use Facilities

Dark Day Picnic Area (NFS Lands)
This facility is scheduled for major rehabilitation in License Year 6, and Yuba Water would provide the following enhancements:

- Install a standardized three-panel entrance station kiosk (License Year 1).
- During License Year 6, concurrent with major rehabilitation of the facility:
    - At the western picnic site cluster:
- Provide a total of 10 picnic sites near the NMWSE – each with a picnic table and a concrete grill with self-contained ash box.
- Remove any existing, remnant picnic sites and amenities (tables and grills); and restore the sites to conditions satisfactory to the USFS.
- Remove the existing Klamath stoves at each picnic site.
- Install signage to direct users from the parking area to the re-located picnic sites via the new outdoor recreation access routes (ORARs).
- Where practical, enhanced reservoir views at the re-located picnic sites through selective vegetation management.
- Yuba Water would apply to Yuba County for an ordinance establishing a non-motorized boating only zone on the reservoir adjacent to the western picnic site cluster.
    - At the northern/peninsula picnic site cluster:
- Provide a total of five picnic sites near the end of the peninsula – each with a picnic table and a concrete grill with self-contained ash box.
- Remove any existing, remnant picnic sites and amenities (tables and grills) beyond the 5 proposed new/improved picnic sites; and restore the sites to conditions satisfactory to the USFS.
- Remove the Klamath stoves at each picnic site.
- Install signage to direct users from the parking area to the re-located picnic sites via improved ORARs.

- Where practical, enhance reservoir views at the re-located picnic sites through selective vegetation management.
    - Replace and relocate the existing four-unit vault restroom with a new four-unit vault model. The restroom would be located to provide for more efficient maintenance and provide the opportunity for expanded parking where the existing restroom is located.
    - Provide a total parking capacity of 34 single vehicle spaces by:
- Re-configuring the existing parking area to maximize the parking capacity, including utilizing the existing island and peripheral areas, as practical; and
- Expanding the parking area to meet the total parking capacity of 34 single spaces.
    - Install trailhead signage for the Bullards Bar Trail, as follows:
- At the parking area, install: (1) a trailhead identification sign; (2) a 1-panel information board with trail information and a map; (3) trailhead identification signs where the Bullards Bar Trail intersects the parking area; and
- On Marysville Road at Dark Day Road junction, install a trailhead identification sign.

Sunset Vista Observation Site (NFS Land)

This facility is scheduled for major rehabilitation during License Year 2. Yuba Water would provide the following enhancements:

- Install a standardized three-panel entrance station kiosk (License Year 1).
- Install two additional picnic sites, each with a picnic table and a concrete grill with self-contained ash box. Note: the site design, vegetation management measures and visual enhancement measures at the new picnic sites should aim to provide shade through existing trees, but in the event that shading via existing trees would not be adequate, then at the time of design and/or construction the installation of shade structures (e.g., ramadas) may be utilized to provide shading (License Year 2).
- Install a water hydrant near the new picnic sites (License Year 2).
- Upgrade the existing picnic site by replacing the picnic table and installing a concrete grill with self-contained ash box (License Year 2).
- Enhance the vistas of the reservoir from each picnic site by selectively clearing vegetation per the guidelines in Yuba Water's *Visual Resources Management Plan* (**Appendix 2B-19**) (License Year 2).
- Replace the existing four-unit vault restroom with a new two-unit vault model (License Year 2).
- Pave and delineate the parking spaces/areas on the shoreline side for the vista/picnic visitors and trailhead users (License Year 2).

- Install a trailhead sign at the start of the Bullards Bar Trail (License Year 2).
- Install a one-panel interpretive display at the picnic sites. The interpretive panel would be approx. 3-ft by 4-ft in size and would contain key historical information about the YRDP, particularly the dam and associated facilities; and the primary purposes of Yuba Water and the YRDP (e.g., flood control, downstream water supply, recreation, fisheries enhancement, hydroelectric generation) (License Year 2).

Dam Overlook Observation Site (Yuba Water Land)[38]
Yuba Water would provide the following enhancements:

- Grade, gravel and install vehicle barriers at the existing parking area for a total parking capacity of 10 single vehicle spaces (License Year 7).
- Install a standardized 3-panel entrance station kiosk (License Year 7).
- Install a one-panel interpretive display. The interpretive panel would be approximately 3-ft by 4-ft in size and would contain key historical information about the YRDP, particularly the dam and associated facilities; and the primary purposes of Yuba Water and the YRDP (e.g., flood control, downstream water supply, recreation, fisheries enhancement, hydroelectric generation) (License Year 7).

Boat Launch Facilities

Cottage Creek Boat Launch (Yuba Water Land)
This facility is scheduled for major rehabilitation in License Year 18, and Yuba Water would provide the following enhancements:

- Install a standardized four-panel entrance station kiosk (License Year 1).

Dark Day Boat Launch (NFS Lands)
This facility is scheduled for major rehabilitation in License Year 4, excluding the overflow boat ramp parking area (constructed in 2004), which is scheduled for major rehabilitation in License Year 10. Yuba Water would provide the following enhancements:

- Overflow Parking Area
    - Improve the switchback trail by conducting basic trail maintenance on the trail connecting the overflow parking area to the boat ramp, including brush cutting, rock and root removal, slough and berm removal, and switchback maintenance (License Year 1).

[38] This facility is scheduled for major rehabilitation during License Year 7. However, as described in YCWA (2023b), the existing location of the Dam Overlook Observation Site is needed to construct the ARC Spillway and the Overlook Site will be relocated approximately 500 ft to the east of the existing site along a relocated segment of the Marysville Road. The relocated Overlook Site will occupy an area that is now partially occupied by Marysville Road but would become available once the road is relocated to the south over the new control structure (YCWA 2023b). It would have a similar surface area to the existing Overlook Site and will be surfaced with aggregate base and asphalt concrete (the former road pavement). The new Overlook Site is planned to have space for 10 vehicles. If the ARC Spillway is constructed, then Yuba Water would alternatively complete the recreation facility major rehabilitation and improvements described below within two years of completion of the ARC Spillway Project.

- Decommission the adjacent, user-created, non-switchback trail (License Year 1).
- Install trail signage at the start and end of the trail (License Year 1).
- Install lighting at the existing restroom (License Year 1).
- Install a standardized four-panel entrance station kiosk (License Year 1).

- Main Parking Area and Boat Ramp
  - A standardized four-panel entrance station kiosk (License Year 1).
  - Install trailhead signage at the parking area (License Year 1).
  - Upgrade the existing launch ramp in consultation with the USFS and the California Division of Boating and Waterways (CDBW) staff that meets: (1) Division of Boating and Waterways ramp design standards; and (2) the goals of straightening widening and extending the boat ramp, minimizing ramp-side erosion[39] and providing a fully functional/accessible floating courtesy dock (License Year 4).
  - Install lighting at the restroom, top of the launch ramp and in the parking area (License Year 4).
  - Replace the existing four-unit vault restroom with a new four-unit vault model (if not done sooner as part of parking area re-organization work under the initial license) (License Year 4).
  - Repave and stripe the existing parking area (if not done sooner as part of parking area reorganization work under the initial license) (License Year 4).
  - Removal of the accessible loading ramp (if not done sooner as part of parking area reorganization work under the initial license) (License Year 4).

- Future Parking Area Expansion
  - Yuba Water would evaluate the need to provide additional boat launch parking at the Dark Day Boat Launch facility based on site-specific monitoring at the Dark Day and Cottage Creek boat launch designated parking areas and overflow parking outside of designated parking areas.

<u>Moran Road Boating Site (NFS Lands)</u>
This facility is scheduled for major rehabilitation in License Year 5, and Yuba Water would provide the following enhancements:

- Install a standardized four-panel entrance station kiosk (License Year 1).
- Closure of Moran boat ramp (at existing gate on boat ramp beyond parking area/restrooms), annually from October 15 to May 1, to protect the California red-legged frog from vehicle mortality (License Year 1).

[39] The Dark Day Boat Launch ramp has a functionality issue at an approximate WSE of 1,856 ft due to slope instability in the upslope side of the ramp, where at times, the slope erodes depositing sediment on the boat ramp – typically during the non-peak season (January up to Memorial Day weekend and after Labor Day through December). The accumulation of sediment impacts the functionality of the boat ramp, making the boat ramp impassable by vehicles backing down boat trailers; and the sediment impedes or damages the function of the boat dock rail and roller system requiring that the dock be removed.

- Replace the gravel on the existing boat ramp (License Year 5).
- Improve each of the three existing turnarounds along the car-top boat ramp (License Year 5) as follows:
    - Widen to meet turning radius standards at the time of design for a large pickup truck.
    - Installing gravel on the turnaround surface, vehicle barriers and appropriate signage.
    - Installing vehicle barrier and signage at the end of the ramp/third turnout to prevent vehicle access beyond.
- Expand the existing parking area by five new single spaces (License Year 5).[40]

Our House Diversion Dam Impoundment Facilities

This site does not have any recreation facilities and, thus, is not scheduled for major rehabilitation. Yuba Water would provide the following enhancements:

- Install a standardized three-panel entrance station kiosk (License Year 1).
- Provide a temporary restroom (1 unit) every year from October 1 through June 30 (License Year 1).
- Construct a "beach access" trail downstream of the diversion dam and weir. The beach access route would be designed to accommodate whitewater boaters transporting rafts, inflatable kayaks and hardshell kayaks from the end of the existing maintenance road below the diversion dam down the slope to the granite bench near the river's edge (License Year 4).
- Provide a wheeled cart designed for carrying whitewater rafts behind the existing locked gate at the parking area (License Year 4).

Other Facilities

Recreational Trails (Bullards Bar and Schoolhouse Trails)

The Bullards Bar and Schoolhouse trails are not scheduled for major rehabilitation. Yuba Water would provide the following enhancements:

- Install a trailhead symbol or sign at all facility entrance signs located along Marysville Road that provide access to YRDP trails and at YRDP trailhead parking areas (License Year 1).
- Install consistent directional signage at all YRDP trail junctions (License Year 1).

[40] Expansion of the parking area may require relocating the existing one-unit vault restroom to provide the 5 additional single vehicle parking spaces.

Recreation Water and Wastewater Systems

- Water Delivery System
    - This facility is scheduled for major rehabilitation in two phases in License Year 3 and 6.
- Replace the first segment of underground water distribution system from the water treatment facility at Cottage Creek Boat Launch, across the dam, along Marysville Road and terminating at the Dark Day Road, including the above-ground span of piping across the dam (License Year 3).
- Replace the underground water distribution system from the end of the first segment above to the Dark Day Campground, Picnic Area and Boat Launch complex (License Year 6).
    - Note: The underground water distribution lines (off the main line) and hydrants within each recreation facility would be replaced as part of the major rehabilitation of each facility and not specifically as part of the main line rehabilitation.
- Water Treatment Facility
    - This facility is scheduled for major rehabilitation in License Year 20. No specific improvements to the water treatment facility and storage tanks are planned at this time. However, as Yuba Water prepares to construct additional recreational facilities as scheduled in the Recreation Facilities Plan, then Yuba Water would rehabilitate, improve and upgrade the capacity of the water treatment facility as needed to meet the water system demands of the existing and new recreation facilities. As noted above, Yuba Water would be replacing and upgrading the water delivery system piping in the first three years of the new license, which Yuba Water expects would improve the overall water system supply. Thus, at a minimum, Yuba Water would wait to see the impacts that the delivery system upgrades have on the overall system supply before addressing any further treatment facility upgrades. In the meantime, Yuba Water would continue to maintain and operate the water treatment facility with the current layout and capacity.
- Water Storage Tanks
    - This facility is scheduled for major rehabilitation in License Year 10. No specific improvements to the water storage tanks near Sunset Vista Observation Site and at the Cottage Creek Boat Launch maintenance yard are planned at this time. However, as Yuba Water prepares to construct additional recreational facilities as scheduled in the Recreation Facilities Plan (Appendix 2B-14), then Yuba Water would rehabilitate, improve and upgrade the storage tanks as needed to meet the water system demands of the existing and new recreation facilities.
- Recreational Wastewater Systems (Septic and Leach Fields)
    - The existing wastewater systems are scheduled for major rehabilitation in License Year 2. No specific improvements to the recreational wastewater systems are planned at this time.

- Floating Comfort Stations
    - This facility is scheduled for major rehabilitation as needed, but no later than License Year 20. When each floating comfort station is replaced during major rehabilitation, Yuba Water would install a station that meets applicable accessibility standards and guidelines.

Proposed New YRDP Recreation Facilities

In addition to the improvements to the existing YRDP recreation facilities, Yuba Water proposes several new YRDP recreation facilities. A description of these new facilities is provided below.

Kelly Ridge Campground (NFS Lands)

Yuba Water would construct a new campground designed to accommodate small groups (double and triple sites) and RVs on Kelly Road off Marysville Road in License Year 9. This is a new recreation site that is proposed to be added to the FERC Project Boundary. The facility would include two discrete camping areas (a conceptual layout is shown in Appendix 2B-14) separated by Kelly Road, and would have the following specific facilities, features and configurations:

- A total of 27 campsites (22 double campsites and 5 triple campsites), each with a paved vehicle spur, RV hookups, and a living space.
    - The double campsites would consist of a paved vehicle spur with 2 single vehicle spaces and 2 RV camping spaces; 2 water and electric RV hookups (no septic); a living space with 1 group-sized fire ring, 2 food lockers, 2 picnic tables and 2 tent pads.
    - The triple campsites would consist of a paved vehicle spur with 3 single vehicle spaces and 3 RV camping spaces; 3 water and electric RV hookups (no septic); a living space with 1 group-sized fire ring, 3 food lockers, 3 picnic tables and 3 tent pads.
- A host site designed for an RV with a 20-ft-wide by 60-ft-long vehicle spur, and RV hookup with water and electric connections, and a septic holding tank.
- A potable water source and delivery system.
- A shower building with 4 shower stalls, 4 flush restroom stalls and a parking area.
- Restroom buildings including (2) two-unit vault buildings and the remainder would be flush buildings.
- Paved circulation roads with vehicle barriers and gates.
- Install a standardized four panel entrance station kiosk and directional signage.

Shadow Ridge Campground (NFS Lands)

Yuba Water would construct a new campground designed to accommodate single families at the former Burnt Bridge Campground site in License Year 5. Work would involve a rebuild of an older decommissioned site (i.e., Burnt Bridge Campground), which is located within the existing FERC Project Boundary. Yuba Water is proposing to retain only those lands that are located within the existing boundary that are necessary for O&M of the Shadow Ridge camping site and

associated trails. The facility would include a campground, trailhead parking area, non-motorized shoreline loop trail, a non-motorized interpretive trail and a reservoir overlook (conceptual layouts are shown in Appendix 2B-14). The facility would have the following specific facilities, features and configurations:

Camping Facilities

- A total of 18 single campsites each with a paved vehicle spur and a living space (1 fire ring, food locker, picnic table and two tent pads).
- A host site designed for an RV (20-ft-wide by 60-ft-long vehicle spur) with water and a septic holding tank.
- A potable water system, including source (well), underground distribution and water hydrants dispersed throughout the campground.
- 2 two-unit restroom buildings (1 flush and 1 vault model).
- Paved circulation roads.
- A 30-person capacity amphitheater with bench seating and a large group fire ring.
- Install a standardized four-panel entrance station kiosk.

Trailhead, Trails and Overlook Facilities

A trailhead parking area consisting of:

- Gravel parking area (10 vehicles) with vehicle barriers.
- Standardized four-panel entrance station kiosk.
- Two-panel interpretive display with information about local wildlife.

A non-motorized shoreline loop trail (at least 48 in. wide) around the Shadow Ridge peninsula.

A non-motorized interpretive trail, with at least a 48-in. wide tread and a native surface, from the trailhead along the existing road to the top of the Shadow Ridge peninsula. The interpretation would include 8–10 interpretive display stations each with a one-panel interpretive display (12 in. by 18 in.) identifying specific local wildlife, vegetation and any other relevant site-specific information.

A reservoir overlook atop the peninsula along the interpretive trail consisting of:

- A picnic area with 3 to 5 picnic sites (tables only).
- A two-panel interpretive display.

Appropriate vegetation management and clearing to enhance the views of the reservoir (Moran Cove).

Future YRDP Campground Expansion

Yuba Water would expand the campground by an additional 10 single campsites based upon the site-specific monitoring detailed in the Recreation Facilities Plan (see Appendix 2B-14). If the monitoring triggers are met, then Yuba Water would expand the campground with the following facilities and amenities.

10 single campsites each with a paved vehicle spur and a living space with 1 fire ring, 1 food locker, 1 picnic table and 2 tent pads).

An extension of the potable water system constructed during the initial development, including underground distribution and water hydrants dispersed throughout the campsites.

A two-unit vault restroom building.

Paved circulation roads.

Cottage Creek Picnic Site (Yuba Water/NFS/Private Lands)

Pending access easements from the private landowners along the access road to the site, Yuba Water would construct a new picnic site (refer to the conceptual layouts in Appendix 2B-14) with the following facilities and features during License Year 2.

Parking Area

Develop a gravel parking area for 15 single vehicles with vehicle barriers.

Install a two-unit vault restroom.

Install a facility identification sign and directional signage at the parking area, and along Yuba County Road 169 at the intersection with the facility access road (USFS Road 18N15).

Install a standardized three-panel entrance station kiosk.

Shoreline Day-Use Area

Develop 10 picnic sites each with a picnic table.

Develop a beach access route (approximately 200 ft to 300 ft) to the NMWSE from the picnic site to the cove southwest of the picnic site.

Yuba Water would apply to Yuba County for an ordinance establishing a non-motorized boating only zone in the cove accessed by the accessible shoreline trail; and install buoys at the mouth of the cove stating non-motorized watercraft only in the cove.

Install a one-panel interpretive display with information about the history of the valley.

Access Road

Provide basic improvements[41] to the existing access road (Forest Service Road 18N15) from the intersection with Yuba County Road 169 to the new parking area. Anticipated road improvements may include: (1) maintaining a native surface road; (2) removing the old asphalt pavement segments; (3) installing spot gravel where road surface needs repair; (4) installing a new culvert plus shoulder drainage improvements where the creek intersects the road; (5) installing vehicle pullouts periodically along the road to allow two-way vehicle passing; and (6) installing signage along the road stating, "No Vehicular Access off Designated Road."

Install vehicle barriers (e.g., gate, boulders, etc.) to prevent vehicle access beyond the road and the parking area.

Install a gate: (1) near the junction with County Road 169; and (2) immediately after the parking area to prevent vehicles from accessing private property beyond the parking area.

Because the road crosses private property, and as a condition of the easement across the private property, the access road may be closed periodically: (1) due to road conditions/safety, until the condition is fixed, which would be Yuba Water's responsibility; and (2) potentially during private logging activity or other potentially dangerous forest management activities on private lands nearby the picnic site.

The Cottage Creek Picnic Site would be open during the same period that the Cottage Creek Campground is open (approximately April 15 to October 15) because the Operating Staff at Cottage Creek Campground (facility located at the start of the day-use facility access road) would be responsible for closing and opening the gate daily. When the Cottage Creek Campground closes, the picnic facility would be closed as well, including signage indicating the facility is closed for the season.

<u>Dark Day RV Dump Station (NFS Lands)</u>
Yuba Water would construct a sanitary dump station for RVs on Dark Day Road in License Year 9. The facility would include the following facilities and features.

A one-lane dump station with an 8,000-gallon holding tank, potable water hydrant, non- potable water tower for cleaning, an overhead light and trash facilities.

A one-way (15-ft-wide) paved circulation road with an RV-sized pullout after the dump station.

A turning lane on Dark Day Road for vehicles coming from the Marysville Road direction.

Install a standardized three-panel entrance station kiosk and facility identification signs.

<u>New Colgate Powerhouse River Access (Yuba Water Land)</u>
Immediately downstream of the New Colgate Powerhouse, Yuba Water would complete the following river access improvements (refer to the conceptual layouts in Appendix 2B-14) in

[41] It is expected that the existing road alignment and width is adequate for the new facility needs.

License Year 2.

Construct a non-motorized river access trail, with 36-in-wide tread and native surface) from the shoulder of Lake Francis Road (Yuba County Road 139) to the river's edge.

Install a standardized three-panel entrance station kiosk.

Install directional signage indicating where parking is permitted/not permitted along the shoulder of Lake Francis Road (Yuba County Road 139).

West Shoreline Trail (Yuba Water/NFS Lands)

Yuba Water would develop a shoreline trail (Figure 2.4-2) and appropriate signage on the west shoreline of New Bullards Bar Reservoir connecting the Cottage Creek recreation complex (boat launch, campground and picnic site) and the Shadow Ridge recreation complex (campground and trails). The trail would be "Class 3" trail designed for non-motorized uses (pedestrian, mountain biking and equestrian uses) with a 48-in-wide native surface tread and a 36-in-wide vegetation clearance on each side of the tread. Yuba Water would install footbridges over stream crossings, and signs to make users aware of the sensitive nature of California red-legged frog habitat along the West Shoreline Trail. Yuba Water would complete this trail construction in two phases, as described below.

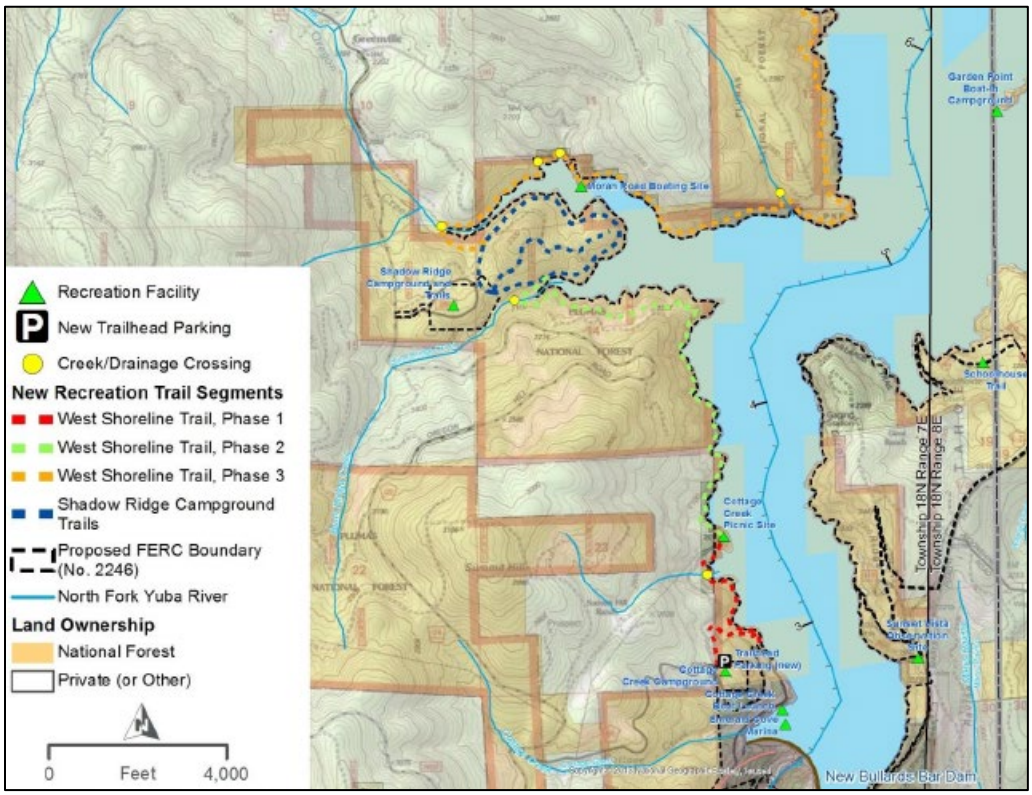

Figure 2.4-2. General alignment for the three phases of the West Shoreline Trail.

Phase 1 Segment: Cottage Creek Boat Launch to Cottage Creek Campground and Cottage Creek Picnic Site

In License Year 2, concurrent with the development of Cottage Creek Picnic Site (new facility to be constructed), Yuba Water would construct an approximately 1.1-mile trail that connects the three adjacent Cottage Creek Facilities – boat launch, campground and picnic site. Trailhead parking areas for this trail segment would utilize the existing parking areas at the Cottage Creek Boat Launch and Cottage Creek Picnic Site. In addition, because the Cottage Creek Campground lacks a suitable parking area to accommodate trailhead parking, Yuba Water would provide a native surface parking area adjacent to the campground alongside USFS Road 18N15 for 10 single vehicles with vehicle barriers and appropriate signage.

Phase 2 Segment: Cottage Creek Picnic Site to Shadow Ridge Campground

In License Year 6, Yuba Water would construct an approximately 4.5-mile trail that connects the Cottage Creek Picnic Site to the trailhead at Shadow Ridge Campground. Notably, Shadow Ridge Campground is a new facility scheduled for construction by Year 5 that would include trails and a trailhead parking area, which would serve as the trailhead for this new trail segment as well.

Phase 3 Segment (Future Expansion): Shadow Ridge Campground to Madrone Cove Boat-in Campground

Yuba Water would develop a third trail segment from Shadow Ridge Campground to Madrone Cove Boat-in Campground based upon the site-specific monitoring detailed in the Recreation Facilities Plan (see Appendix 2B-14).

2.4.1.1.4 YRDP Recreation Facility Operating Season

YRDP recreation facilities would remain open with all services to be provided under the responsibility of Yuba Water according to the schedules by type of facility shown in Table 2.4-3.

Table 2.4-3. Operating season for each type of YRDP recreation facility.

Type of Facility	Operating Season		Conditions
	Open	Close	
All Campgrounds	April 15	October 15	Once outside the peak season (Memorial Day to Labor Day), partial closures of the camping facilities may occur due to reduced use.
Dark Day and Cottage Creek Picnic Sites	April 15	October 15	Access to Cottage Creek Picnic Site occurs over private lands where private timber activities may require temporary closures.
All Other Day-use Facilities	January 1	December 31	Some Facilities may be closed during winter months due to very low use (e.g., close restroom buildings, trash facilities, water, etc.)
Boat Ramps	January 1	December 31	As conditions permit. If ramps are out of the water, ramp may be closed or remain open but with appropriate warning signs.
Recreational Trails	January 1	December 31	Whole or sections of trail may need to be closed temporarily due to weather or other site conditions.

Outside of the operating season, necessary closing and opening preparations, and any additional maintenance and repairs that were not possible during the operating season, would be the responsibility of Yuba Water. When YRDP recreation facilities are closed, Yuba Water would post information in a conspicuous location at the facilities and on Yuba Water's website to advise the public that the facilities are closed and provide the information to the USFS for electronic posting on the USFS website. Major rehabilitation/reconstruction of YRDP recreation facilities or

unforeseen damage to facilities may require Yuba Water to close facilities until construction or repairs are complete and the facility is in safe working order.

2.4.1.1.5 Proposed Construction of YRDP Recreation Facilities

Yuba Water's YRDP Proposed Condition RR1 (Recreation Facilities Plan) includes a detailed implementation schedule for major rehabilitation, near-term rehabilitation and enhancements at each existing recreation facility and for new recreation facilities extending from License Year 1 through 20. The majority of the work on NFS lands would occur within the first eleven years of the new license, with some work on Yuba Water facilities occurring in Years 14 through 20. After Year 20, the need for replacement and/or redevelopment of facilities would be discussed and planned during annual coordination meetings with the USFS, as described in Yuba Water's *Recreation Facilities Plan* (Appendix 2B-14).

As described in the Recreation Facilities Plan (see Appendix 2B-14), major recreation rehabilitation and improvement work generally involves a three-step planning and implementation process. Steps in this process include: (1) preparation of a Site Plan (Design Narrative and Site Concept Plan); (2) preparation of a Site Development and Construction Plan; and (3) contracting and construction for each facility. In addition, for all sites located on NFS lands, reconstruction plans and minor recreation rehabilitation or improvements would meet current USFS standards, and each step would require approval by the USFS. It is also recognized that variances may occur because of the complexity or simplicity of the rehabilitation or improvement work. As a rule, construction (Step 3) would not occur until all environmental and permitting work is complete. However, the timing and scope of the environmental review and permitting work would vary between major rehabilitation of existing recreation facilities as compared to the construction of new facilities (YCWA 2022b).

The *Recreation Facilities Plan* further states "*For major rehabilitation of existing Facilities, YCWA anticipates the FERC relicensing EIS* [and this DEIR] *will cover the environmental analysis and the permitting scope of work will be well-known, well-defined and will begin after 100 percent design (Step 2) is complete. In comparison, for the construction of new Facilities, YCWA expects an increased level of environmental review and permitting to occur overall and earlier on in the three-step planning process (often starting in Step 1 compared to after Step 2 for major rehabilitation). YCWA expects that environmental studies and analysis will be needed, particularly where new Facilities are located outside the existing FERC Project boundary; and these studies may be necessary to inform the design process (e.g., avoidance of sensitive resources) in Step 2 (Site Development Plan and Construction Plan)*."

2.4.1.1.6 YRDP Proposed Primary Project Roads

Yuba Water's YRDP Proposed Condition LU1, *Transportation System Management Plan*, provides guidance for the rehabilitation and maintenance of Primary Project Roads and Trails, which are non-general use roads and trails that are primarily used for the YRDP. A "Primary Project Road" or "Primary Project Trail" is a road or trail that is identified in the FERC license as a YRDP facility, is used almost exclusively to access the YRDP, is entirely within the FERC Project Boundary (and therefore will be under FERC's jurisdiction for the YRDP Proposed Project) and is maintained exclusively by Yuba Water as a YRDP project feature. General Access

Roads are general use roads that are outside the FERC Project Boundary. Yuba Water has consulted with the USFS to determine which roads on NFS land are Primary Project Roads and which are General Access Roads. In addition, if a road providing primary access to YRDP facilities is a County Road, it is included in a Road Maintenance Agreement between Yuba Water and Yuba County. The Road Maintenance Agreement is for maintenance of County Road segments that provide primary access to YRDP facilities, including "driveway" entrances to YRDP Recreation Roads that fall within a County Road right-of-way. This agreement is not jurisdictional to the FERC license and is intended to remain as a separate agreement between Yuba Water and Yuba County that generally addresses shared responsibilities and funding. Yuba Water renews the Road Maintenance Agreement with Yuba County on an annual basis, and it is consistent with the Primary Project Roads and Trails list.

Yuba Water proposes the following Primary YRDP Project Roads and Trails (Table 2.4-4) and Recreation Roads[42] (Table 2.4-5). Additional details are available in Yuba Water's Transportation System Management Plan (see **Appendix 2B-17**), which presents more specific information on YRDP roads and trails, general road maintenance activities and standards, recommended rehabilitation of roads in poor condition, and the scope of improvements needed for design, construction, O&M, signage and rehabilitation, with emphasis on Primary Project Roads and Trails and Recreation Roads on NFS land.

Table 2.4-4. Primary YRDP Project Roads and Trails (non-recreation roads and trails).

Road Name	Begin	End	Land Ownership	Mile Marker-Start	Mile Marker-End	Total Length (mile)
Our House Diversion Dam Road (TNF Rd 0180-Our House)	Ridge Road	Our House Diversion Dam	Private	0	0.79	0.79
	USFS	--	USFS	0.79	0.85	0.06
	Private	--	Private	0.85	1.12	0.27
	USFS	--	USFS	1.12	1.93	0.81
Our House Diversion Dam Road Spur	Our House Diversion Dam Road	Our House Diversion Dam	USFS	0	0.03	0.03
Log Cabin Diversion Dam Road	Highway 49	Log Cabin Diversion Dam	Private	0	0.15	0.15
	USFS	--	USFS	0.15	0.42	0.27
	Private	--	Private	0.42	0.50	0.08
	USFS	--	USFS	0.50	0.85	0.35
	Private	--	Private	0.85	1.09	0.24
	USFS	--	USFS	1.09	1.33	0.24
	Private	--	Private	1.33	1.37	0.04
Garden Valley Road	USFS	--	USFS	0	2.53	2.53
Sunset Vista Point Road Spur	USFS	Yuba Water's Water Storage Tanks	USFS	0.66	0.82	0.16
Cottage Creek Shoreline Access Road	Cottage Creek Campground Access Road	New Bullards Bar Reservoir	USFS	0	0.08	0.08
New Bullards Bar Dam Road	County Road 8	New Bullards Bar Dam	Private	0	1.09	1.09
New Bullards Bar Dam Road Spur	New Bullards Bar Dam Road	New Bullards Bar Dam	Private	0	0.11	0.11

[42] For the purposes of Yuba Water's YRDP Transportation System Management Plan, a "Recreation Road" or "Recreation Trail" is a road or trail that provides access to YRDP-related recreation facilities and is within the FERC Project Boundary. Recreation Roads typically extend from a Primary Project Road or a county or state road to and within a YRDP recreation facility. A Recreation Road includes all roadways and parking areas within a YRDP recreation facility, so is part of the YRDP facility identified in the FERC license. A Recreation Trail provides foot access from one YRDP facility to another YRDP facility or along a YRDP facility (e.g., a reservoir). Recreation Roads and Recreation Trails are maintained exclusively by Yuba Water.

Table 2.4-4. (Continued).

Road Name	Begin	End	Land Ownership	Mile Marker-Start	Mile Marker-End	Total Length (mile)
New Bullards Bar Dam Compliance Flow Gage Trail	New Bullards Bar Dam Road	Stream Gage	Private	0	0.12	0.12
Colgate Tunnel Lane	County Road 139	Penstock	Private	0	0.72	0.72
Colgate Tunnel Muck Road	Colgate Tunnel Lane	Rock Pit	Private	0	0.85	0.85
Colgate Haul Road	County Road 139	Penstock	Private	0	0.23	0.23
Colgate Tunnel Penstock Road	Colgate Tunnel Muck Road	Penstock	Private	0	0.15	0.15
Penstock Access Road #1	County Road 1051	Penstock	Private	0	0.23	0.23
Penstock Access Road #1 Spur	Penstock Access 1	Penstock	Private	0	0.04	0.04
Penstock Access Road #2	County Road 1051	Penstock	Private	0	0.10	0.10
Penstock Access Road #3	County Road 1051	Penstock	Private	0	0.10	0.10
Penstock Access Road #4	County Road 1051	Penstock	Private	0	0.15	0.15
Narrows 2 Powerhouse Road	County Road 222	Narrows 2 Powerhouse	State of California	0	1.50	1.50
	USACE	--	USACE	1.50	2.07	0.57
Narrows 2 Intake Spur	Narrows 2 Powerhouse Road	Narrows 2 Intake	State of California	0	0.14	0.14
	USACE	--	USACE	0.14	0.20	0.06
Narrows 2 Compliance Flow Gage Trail	Narrows 2 Access	Stream Gage	USACE	0	0.18	0.18
	--	--	Private	0.18	0.21	0.03
Total	**33 road segments**					**12.47 miles**

Table 2.4-5. Recreation roads included in the YRDP.

Road Name	Associated Recreation Facility	Begin	End	Land Ownership (FS Road #, if applicable)	Mile Marker-Start	Mile Marker-End	Total Length (mile)
Dark Day Access Road	Dark Day Recreation Area	0.33-mile from County Road 8[1]	Entrance to Dark Day Boat Launch and Campground Roads	USFS	0	0.23	0.23
Dark Day Boat Launch Road	Dark Day Boat Launch	Forest Service	New Bullards Bar Reservoir	USFS	0	0.28	0.28
Dark Day Campground and Picnic Area Road	Dark Day Campground and Picnic Area	Forest Service	Campground	TNF Rd 0008-004	0	0.44	0.44
Schoolhouse Campground Loop Road	Schoolhouse Campground	County Road 8	Campground	TNF Rd 0008-005, 0008-005-001, 0008-005-002 and 0008-003	0	0.97	0.97
Hornswoggle Group Campground Road	Hornswoggle Group Campground	County Road 8	Campground	TNF Rd 0008-006	0	0.33	0.33
Moran Boat Launch Access Road	Moran Boat Launch	Moran Road	New Bullards Bar Reservoir	USFS	0	0.20	0.20
				Yuba Water	0.20	0.29	0.09
Cottage Creek Campground Road	Cottage Creek Campground	County Road 169	Campground	USFS	0	0.14	0.14
Cottage Creek Campground Access Road	Cottage Creek Campground	County Road 8	Cottage Creek Campground	Yuba Water	0	0.47	0.47
				USFS	0.47	0.82	0.35
				Yuba Water	0.82	1.16	0.34
				USFS	1.16	1.24	0.08
Cottage Creek Boat Launch Road	Cottage Creek Boat Launch	County Road 169	New Bullards Bar Reservoir	Yuba Water	0	0.15	0.15
Total	**13 road segments**						**4.07 miles**

[1] Yuba County has confirmed the first 0.33-mile is County Road 181.

The roads listed above in Table 2.4-4 and Table 2.4-5 are inclusive of all YRDP Project Roads for O&M of the YRDP.[43] For clarity regarding proposed changes to the YRDP, Yuba Water's proposed modifications to the existing Primary Project Roads and Trails and Recreation Roads are listed below. Table 2.4-6 shows YRDP Primary Project Roads and Trails that have been added, and Table 2.4-7 shows Recreation Roads added and removed. The YRDP Proposed Project only includes proposed additions to, and withdrawals of, Recreation Roads associated with the YRDP New Colgate Development. Yuba Water does not propose any changes to Recreation Roads and Trails associated with the YRDP New Bullards Bar Minimum Flow Development or the YRDP Narrows 2 Development.

Table 2.4-6. Proposed additions to Primary Project Roads and Trails (non-recreation roads and trails) included in the YRDP, by Development.

Road Name	Begin	End	Land Ownership	Mile Marker-Start	Mile Marker-End	Total Length (mile)
NEW COLGATE DEVELOPMENT						
Garden Valley Road	Forest Service	--	Forest Service	0	2.53	2.53
Sunset Vista Point Road Spur	Forest Service	YWCA's Water Storage Tanks	Forest Service	0.66	0.82	0.16
New Bullards Bar Dam Compliance Flow Gage Trail	New Bullards Bar Dam Road	Stream Gage	Private	0	0.12	0.12
Colgate Tunnel Lane	County Road 139	Penstock	Private	0	0.72	0.72
Colgate Tunnel Muck Road	Colgate Tunnel Lane	Rock Pit	Private	0	0.85	0.85
Colgate Haul Road	County Road 139	Penstock	Private	0	0.23	0.23
Road Name	**Begin**	**End**	**Land Ownership**	**Mile Marker-Start**	**Mile Marker-End**	**Total Length (mile)**
Colgate Tunnel Penstock Road	Colgate Tunnel Muck Road	Penstock	Private	0	0.15	0.15
Penstock Access Road #1	County Road 1051	Penstock	Private	0	0.23	0.23
Penstock Access Road #1 Spur	Penstock Access 1	Penstock	Private	0	0.04	0.04
Penstock Access Road #2	County Road 1051	Penstock	Private	0	0.10	0.10
Penstock Access Road #3	County Road 1051	Penstock	Private	0	0.10	0.10
Penstock Access Road #4	County Road 1051	Penstock	Private	0	0.15	0.15
NEW BULLARDS BAR FLOW DEVELOPMENT						
None						
NARROWS 2 DEVELOPMENT						
Narrows 2 Compliance Flow Gage Trail	Narrows 2 Access	Stream Gage	USACE	0	0.03	0.03
	--	--	Private	0.03	0.21	0.18
Total	**14 road segments**					**5.59 miles**

[43] Yuba Water's responsibilities as they relate to specific non-YRDP, general access roads in Yuba County are to be addressed in a Road Maintenance Agreement between Yuba Water and Yuba County, which is outside of the FERC relicensing process. Yuba Water's responsibilities as they relate to specific non-YRDP, general access roads on NFS land may be addressed in a Road Maintenance Agreement between Yuba Water and the USFS, which is also outside of the FERC relicensing process. In addition, the Road Maintenance Agreement between Yuba Water and Yuba County will address maintenance of County Road segments that provide primary access to YRDP facilities, including "driveway" entrances to YRDP Recreation Roads that fall within a County Road right-of-way. General access roads are maintained jointly and are not a YRDP facility or feature.

Table 2.4-7. Proposed additions to and withdrawals of Recreation Roads associated with the YRDP New Colgate Development.

Road Name	Associated Recreation Facility	Begin	End	Land Ownership (FS Road #, if applicable)	Mile Marker-Start	Mile Marker-End	Total Length (mile)
PROPOSED ADDITION							
Dark Day Access Road	Dark Day Recreation Area	0.33-mile from County Road 8[1]	Entrance to Dark Day Boat Launch and Campground Roads	Forest Service	0	0.23	0.23
Total	**1 road segment added**						**0.23-mile**
PROPOSED WITHDRAWAL							
Burnt Bridge Campground Loop Road (PNF Rd 18N07)	Burnt Bridge Campground	County Road 129	Campground	Forest Service	0	0.77	0.77
Total	**1 road segment removed**						**0.77-mile**

[1] Yuba County has confirmed the first 0.33-mile is County Road 181.

2.4.1.2 Proposed Changes to the YRDP FERC Project Boundary

Yuba Water proposes several changes to the FERC Project Boundary for the YRDP to more accurately define lands necessary for the safe O&M of the YRDP and other purposes, such as recreation, shoreline control, and protection of environmental resources. There are two categories of proposed Project Boundary changes:

- Category 1 - Corrections to the existing FERC Project Boundary to: (1) add lands currently utilized with a preponderance of use related to the YRDP O&M; (2) add lands associated with proposed new recreation facilities under Yuba Water's proposed resource management measures; or (3) remove lands from the Project Boundary that do not have YRDP Facilities and are not used or necessary for YRDP O&M. These proposed changes are essentially making corrections to the FERC Project Boundary.
- Category 2 - Proposed changes to the existing FERC Project Boundary around the YRDP reservoir and impoundments from surveyed coordinates to a contour located above the NMWSE. These changes are proposed, consistent with the preferred method of defining new project boundaries as outlined in the FERC Drawing Guide (FERC 2014, as cited in FERC 2019), as it is a better representation of lands required for O&M around the YRDP reservoirs.

Proposed changes are discussed by YRDP development below. Additional details regarding proposed changes are shown in maps provided in Appendix 2A-5. Since 2019, additional changes to the YRDP FERC Project Boundary related to the proposed inclusion of the ARC Spillway[44] have been identified, which are displayed on Figure 2.4-3.

[44] For CEQA compliance purposes, Yuba Water's ARC Spillway is a separate project with independent utility that was fully analyzed in a separate environmental review process, which included the preparation of a DEIR (YCWA 2023b) and Final EIR (YCWA 2024b). For completeness, the ARC Spillway is included in the YRDP Proposed Project because: (1) it was included as part of Yuba Water's proposed (2017) AFLA; (2) it was included as part of the FERC Staff Alternative that was evaluated in FERC's (2019) FEIS; and (3) the ARC Spillway facilities and operations will be included as part of the new license for the YRDP that is issued by FERC.

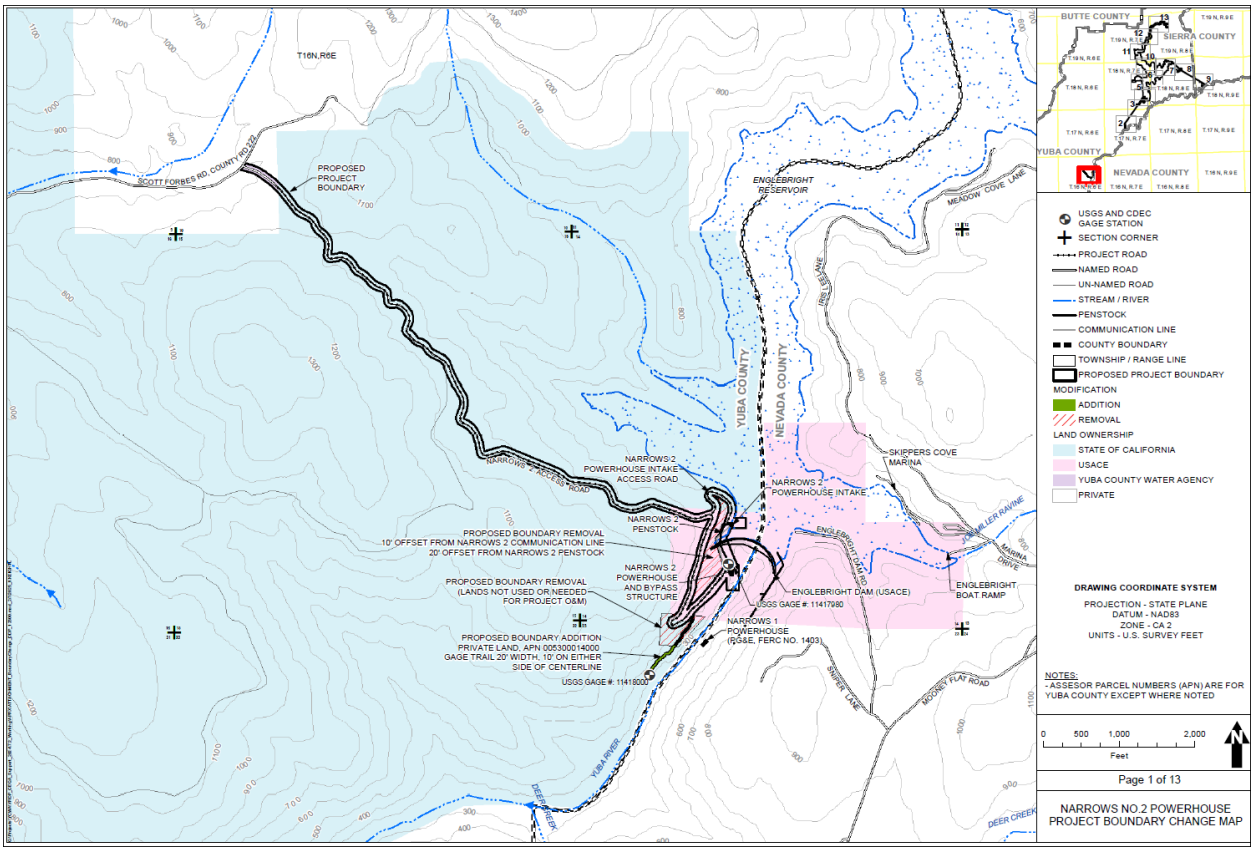

Figure 2.4-3. Proposed changes to the existing YRDP FERC Project Boundary related to the proposed inclusion of the ARC Spillway as part of a new FERC license for the YRDP.

2.4.1.2.1 YRDP New Colgate Development

For the New Colgate Development, Yuba Water proposes the following changes under the category of corrections to the existing Project Boundary:

- Add the areas that encompass 100-ft rights-of-way (i.e., 50 ft on either side of centerline) of nine separate Primary Project Roads used to access and maintain the New Colgate Surge Chamber, New Colgate Powerhouse Penstock and New Colgate Powerhouse. Lands in these proposed additions are owned by private landowners and by Yuba Water.
- Remove land owned by PG&E to the east of New Colgate Powerhouse (Yuba County Assessor's Parcel Number 048270011000). This land is not used or needed for YRDP O&M. PG&E owns and uses the land to maintain PG&E facilities located within the boundaries of that parcel.
- Add the area that encompasses USGS Gage 11413517 (located at the Old Colgate Diversion Dam) and the Primary Project Trail used to access the gage for YRDP O&M purposes. Yuba Water owns the land in this proposed addition.
- Remove lands that encompass a section of Marysville Road (County Road 8) that is in the existing Project Boundary. Marysville Road is commonly used for many purposes not related to the YRDP and as such it is not considered a Primary Project Road. Land in this proposed removal area is owned by private landowners and by Yuba Water.

- Remove the area north of a 50-ft offset from centerline of Cottage Creek Campground Access Road to the proposed boundary near New Bullards Bar Reservoir's edge, except the area surrounding the Cottage Creek Campground. Land parcels in this region are not currently used for YRDP O&M. Land in this proposed removal area is a combination of lands owned by Yuba Water and federal land managed by the USFS as part of the PNF.
- Add the area that encompasses a 100-ft right-of-way (i.e., 50 ft on either side of centerline) of the section of road that connects the Cottage Creek Campground Access Road to Cottage Creek Campground. Yuba Water and private landowners own the land in this proposed addition.
- Remove the area that encompasses the Administration Site located north of the Sunset Vista Observation Site that is used for non-YRDP related activities by the USFS with the exception of the water supply system that provides water to YRDP recreation sites, which includes a 25-ft offset from water distribution tanks and 20-ft right-of-way (i.e., 10 ft on either side of centerline) of water distribution pipe alignments. Also included in the exception is a short segment of a 100-ft right-of-way (i.e., 50 ft on either side of centerline) of the section of road that provides access to the water storage tanks from the Administration Site. The USFS manages this federal land as part of the TNF.
- Add the area that encompasses a 20-ft right-of-way (i.e., 10 ft on either side of centerline) around the YRDP portion of the Bullards Bar Trail that follows along the southeast side of the New Bullards Bar Reservoir. Land in this proposed addition is a combination of federal land managed by the USFS as part of the TNF and land owned by Yuba Water.
- Add the area that encompasses a 20-ft right-of-way (i.e., 10 ft on either side of centerline) around the Schoolhouse Trail that provides access to the Bullards Bar Trail from Schoolhouse Campground. Land in this proposed addition is a combination of federal land managed by the USFS as part of the TNF, Yuba County road right-of-way, and private landowners.
- Add the area that encompasses a 20-ft right-of-way (i.e., 10 ft on either side of centerline) around the water distribution pipe alignments that parallel both Marysville Road (County Road 8) and Dark Day Road. The water distribution system provides water to YRDP recreation sites and is considered a YRDP facility. Land in this proposed addition is federal land managed by the USFS as part of the TNF.
- Add the area that encompasses the leach field that is a part of the Hornswoggle Group Campground. Land in this proposed addition is federal land managed by the USFS as part of the TNF.
- Add the area that encompasses a 100-ft right-of-way (i.e., 50 ft on either side of centerline) of the non-county-maintained portion of the Dark Day Access Road which provides access to Dark Day Boat Launch, Picnic Area, and Campground. The non-county-maintained road starts approximately 0.33-mile from Marysville Road. Land in this proposed addition is federal land managed by the USFS as part of the TNF.
- Add the area that encompasses a 100-ft right-of-way (i.e., 50 ft on either side of centerline) of the non-county-maintained portion of Garden Valley Road, which provides YRDP maintenance access for the annual removal of debris and maintenance access to Garden

Point Boat-In Campground. The non-county-maintained road begins just past the gate located approximately at the road's intersection with the Township Line common between Section 5, T18N, R8E, and Section 32, T19N, R8E. Land in this proposed addition is federal land managed by the USFS as part of the TNF.

- Add the area that encompasses a 100-ft right-of-way (i.e., 50 ft on either side of centerline) around the Primary Project Road that is used to access USGS Gage 11408880 located downstream from Our House Diversion Dam. Land in this proposed addition is federal land managed by the USFS as part of the TNF.
- Remove lands around the former Burnt Bridge Campground site with the exception of the lands proposed to be utilized for the construction of the proposed new Shadow Ridge Campground access road and facilities. The lands proposed to remain within the Project Boundary include the newly proposed trails associated with the proposed new Shadow Ridge Campground. Lands in this proposed removal are federal lands managed by the USFS as part of the PNF.

For the New Colgate Development, Yuba Water proposes the following changes under the category of expanding the existing FERC Project Boundary in anticipation of proposed new recreation facilities:

- Add the area that encompasses the proposed new Kelly Ridge Campground. Land in this proposed addition is federal land managed by the USFS as part of the TNF.
- Add the area that encompasses both the proposed new Dark Day RV Dump Station and the proposed Dark Day Entrance Station. Land in this proposed addition is federal land managed by the USFS as part of the TNF.
- Add the area that encompasses a 20-ft right-of-way (i.e., 10 ft on either side of centerline) around the proposed new Our House Diversion Dam River Access Trail. Land in this proposed addition is federal land managed by the USFS as part of the TNF.

For the New Colgate Development, Yuba Water proposes the following changes under the category of redefining the boundary around the YRDP reservoir and impoundments from surveyed coordinates to a contour located above the NMWSE. A contour 30 ft above NMWSE or 200 horizontal ft from the NMWSE was chosen to define the proposed boundary for each of the three YRDP impoundments in areas where the boundary is not already defined to encompass YRDP facilities and recreation sites. The proposed boundary would encompass between 50 and 200 horizontal ft from the reservoir NMSWE except where slopes exceed 60 percent, in which case the boundary would encompass less than 50 horizontal ft. As such, the proposed boundary would provide shoreline access from the reservoir of at least 50 ft for all areas where slopes are unsafe (FERC 2019).

- Add and remove land such that the Project Boundary around New Bullards Bar Reservoir where the Project Boundary is not encompassing YRDP facilities or proposed YRDP facilities is defined by the lesser (closer to reservoir NMWSE) of either the topographic contour of 1,985 ft, which is 30 ft above the NMWSE, or 200 horizontal ft from the NMWSE. Lands in this proposed change are a combination of lands owned by private landowners and Yuba Water, and federal lands managed by the USFS as part of the PNF and the TNF.
- Add and remove lands such that the Project Boundary around Log Cabin Diversion Dam impoundment where the Project Boundary is not encompassing YRDP facilities is defined by the topographic contour of 2,000 ft, which is 30 ft above the NMWSE. Lands in these proposed changes are a combination of federal lands managed by the USFS as part of the TNF, lands owned by Yuba Water, and a small area within a Yuba County road right-of-way.
- Add and remove lands such that the Project Boundary around Our House Diversion Dam impoundment where the Project Boundary does not encompass YRDP facilities is defined by the topographic contour of 2,060 ft, which is 30 ft above the NMWSE. Lands in these proposed changes are a combination of federal lands managed by the USFS as part of the TNF, and land owned by private landowners.

2.4.1.2.2 YRDP New Bullards Bar Minimum Flow Development

For the New Bullards Bar Minimum Flow Development, Yuba Water proposes the following changes under the category of corrections to the existing FERC Project Boundary.

- Add the area that encompasses a 20-ft right-of-way (i.e., 10 ft on either side of centerline) around the Primary Project Trail that is used to access USGS Gage 11413517 downstream of the New Bullards Bar Minimum Flow Powerhouse. Yuba Water owns the land in this proposed addition.

2.4.1.2.3 YRDP Narrows 2 Development

For the Narrows 2 Development, Yuba Water proposes the following changes under the category of corrections to the existing Project Boundary.

- Add the area that encompasses a 20-ft right-of-way (i.e., 10 ft on either side of centerline) around the Primary Project Trail that is used to access USGS Gage 11418000 located downstream of the Narrows 2 Powerhouse and the gage building itself. Land in this proposed addition is owned by and managed by the State of California.

- Remove the area that extends south beyond a 100-ft right-of-way (i.e., 50 ft on either side of centerline) along the Narrows 2 Powerhouse Access Road, which is a Project Road. This land is not used for YRDP O&M and does not have any YRDP facilities. Lands in this proposed removal area are a combination of federal land managed by USACE, land owned and managed by the State of California, and land owned by private landowners.
- Remove the area that is between a 50-ft offset from the centerline of Narrows 2 Powerhouse Access Road, 50-ft offset from the centerline of Narrows 2 Powerhouse Intake Access Road, and a 10-ft offset from westernmost extent of either the communication line between the Narrows 2 Powerhouse and Powerhouse Intake Structure or the Narrows 2 Powerhouse Penstock. These land parcels are not used for YRDP O&M and do not have any YRDP facilities. Land in the proposed removal is federal land managed by USACE.

2.4.1.2.4 Other Areas

Based on FERC staff recommendations in the Draft EIS (FERC 2018) and in the FEIS (FERC 2019),[45] Yuba Water has proposed to modify the proposed FERC Project Boundary for the YRDP to include lands adjacent to New Bullards Bar Dam necessary for operating and maintaining the proposed ARC Spillway (Figure 2.4-2), and lands necessary for the construction of the proposed trail along the west shoreline of New Bullards Bar Reservoir between Cottage Creek Campground and Madrone Cove Boat-in Campground.

As previously discussed in Section 2.1.2.1.1, separate from the YRDP relicensing process and this DEIR, Yuba Water has filed a non-capacity amendment of the existing FERC license for the YRDP to add the ARC Spillway to the Project. As part of Yuba Water's application for a non-capacity amendment (YCWA 2025) for the ARC Spillway Project, Yuba Water identified the enlargement of the FERC Project Boundary by approximately 12.8 ac to encompass a new access road to the spillway chute and an existing but overgrown Forest Service access road to the discharge channel. Even though a new secondary spillway was addressed in FERC's (2019) FEIS, FERC staff requested that Yuba Water include in its application for non-capacity amendment an APDEA that

[45] FERC (2019) concluded that, in general, Yuba Water's proposed changes to the FERC Project Boundary for the YRDP reflect lands needed to fulfill YRDP purposes, with two exceptions. Around New Bullards Bar Reservoir, the proposed reduction in land within the FERC Project Boundary would continue to provide sufficient shoreline access and be consistent with FERC guidelines that the Project Boundary should not extend more than 200 ft upslope from the NMWSE. Comparing the proposed Project Boundary, as shown on Appendix 2, Exhibit G maps, and the proposed West Shoreline Trail alignment, as shown in the proposed Recreation Facilities Plan (RR1), the proposed Project Boundary would remove at least some YRDP lands where this trail would be constructed. The trail would be part of Yuba Water's recreation facilities that support public access to the YRDP, and FERC recommend that the Project Boundary include the trail in any new license issued for the YRDP. Additionally, FERC (2019) concluded that the proposed FERC Project Boundary does not appear to include sufficient land for operating and maintaining the New Bullards Bar Dam auxiliary flood control outlet (i.e., ARC Spillway). FERC recognized that: (1) the proposed ARC Spillway would require an access road, borrow sites, and disposal areas that appear to be located outside the proposed FERC Project Boundary; and (2) Yuba Water would likely need to periodically use the access road after construction to perform maintenance at outlet works (e.g., remove vegetation, repairs). Similarly, borrow and disposal sites would likely require ongoing monitoring and treatment to address erosion and visual effects. Accordingly, these lands would be necessary for the construction and maintenance of the auxiliary flood control outlet, and therefore, should be enclosed within the FERC Project Boundary for the YRDP. For these reasons, FERC recommended that Yuba Water modify the proposed FERC Project Boundary to enclose project land in the vicinity of: (1) Marysville Road and New Bullards Bar Dam access road; and (2) the west shoreline of New Bullards Bar Reservoir between Cottage Creek Campground and Madrone Cove Boat-in Campground. Because these lands are already part of the existing FERC Project Boundary of the current license, there is no cost (relative to existing conditions) to enclose these lands within the project Boundary. In response to the FERC staff recommendation in the Draft EIS, Yuba Water (July 30, 2018 comments on the Draft EIS) proposed to modify the FERC Project Boundary consistent with the FERC staff recommendation (FERC 2019).

focused solely on the new ARC Spillway and anticipated changes under the existing FERC license (YCWA 2025). Although the timing of when (and if) FERC may approve Yuba Water's request and amend the existing FERC license for the YRDP to add the ARC Spillway is uncertain, it is assumed that the amendment of the license potentially could be completed in advance of completing the CEQA process for the YRDP relicensing.

The modifications to the FERC Project Boundary described above would reduce the amount of federal land administered by the USFS by 1,003.4 ac (from 4,445.6 ac to 3,442.2 ac) and would reduce the amount of federal land administered by USACE by 4.9 ac (from 16.1 ac to 11.2 ac). In total, the proposed changes would decrease the total area within the Project Boundary by 1,591.8 ac, including 1,003.4 ac of land managed by the USFS and 5.0 ac of land managed by USACE.

The resulting changes in the FERC Project Boundary for the YRDP are shown in Table 2.4-8.

Table 2.4-8. Summary of land ownership within the proposed FERC Project Boundary, by YRDP Development, and difference as compared to existing FERC Project Boundary for the YRDP.

YRDP Development	USFS (acres)	USACE (acres)	State of California (acres)	Yuba Water (acres)	Other Private (acres)	Total	
						Acres	Percent
PROPOSED FERC PROJECT BOUNDARY							
New Colgate	3,442.2	0	0	2,634.8	199.9	6,276.9	99.5%
New Bullards Minimum Flow	0	0	0	<0.1	0	0	0%
Narrows 2	0	11.2	20.3	1.2	0	32.7	0.5%
Total	**3,442.2**	**11.2**	**20.3**	**2,636.0**	**199.9**	**6,309.6**	**100%**
Percent	**54.6%**	**0.2%**	**0.3%**	**41.8%**	**3.2%**	**--**	**--**
DIFFERENCE BETWEEN EXISTING AND PROPOSED FERC PROJECT BOUNDARY							
Difference	**-1,003.4**	**-5.0**	**-0.6**	**-569.3**	**-13.5**	**-1,591.8**	**-21.7%**

2.4.1.3 Yuba Water Proposed Changes to Conditions in the Existing YRDP FERC License

Yuba Water developed proposed conditions for the YRDP, including associated implementation plans, for the new license in collaboration with Relicensing Participants. Table 1.4-5 in Exhibit E of the AFLA (YCWA 2017a) presented a comprehensive list of Yuba Water's YRDP Proposed Conditions and Yuba Water's understanding of agreement on each of the 41 conditions that were proposed by Yuba Water.

In particular, 12 of Yuba Water's YRDP Proposed Conditions would modify flow requirements in the existing FERC license and, thereby, affect future YRDP operations. Each of these 12 proposed conditions is summarized below.

2.4.1.3.1 WYTs for Conditions Pertaining to New Bullards Bar Dam, Our House Diversion Dam, and Log Cabin Diversion Dam (Yuba Water's YRDP Proposed Condition WR2)

Yuba Water's YRDP Proposed Condition WR2 includes the definition of a new hydrologic index, the "Smartsville Hydrological Index," and associated WYTs that are used to determine minimum required flows on the North Yuba River downstream of New Bullards Bar Dam, the Middle Yuba River downstream of Our House Diversion Dam, and on Oregon Creek downstream of Log Cabin Dam These hydrologic year types are defined by published forecasts of annual unimpaired Yuba

River flow near Smartsville and computed unimpaired flows for previous months. DWR publishes forecasts of annual volumes of unimpaired Yuba River flow near Smartsville in its Bulletin 120, Water Conditions in California, every year in early February, March, April and May. After the end of the WY (i.e., beginning of October), Yuba Water would use the actual annual volume of unimpaired Yuba River flow near Smartsville for the previous WY to determine the WYT used until the next forecast is released (i.e., in early February). Table 2.4-9 shows the Smartsville Hydrological Index thresholds and associated WYTs.

Table 2.4-9. Smartsville Hydrological Index WYTs and associated thresholds (YCWA 2017a).

WYT	Forecast of Total Unimpaired Runoff in the Yuba River at Smartsville in Thousand Acre-Feet or DWR Full Natural Flow Near Smartsville for the Water Year in Thousand Acre-Feet[1]
Wet	Greater than 3,240
Above Normal	2,191 to 3,240
Below Normal	1,461 to 2,190
Dry	901 to 1,460
Critically Dry	616 to 900

1 DWR rounds the Bulletin 120 forecast to the nearest thousand acre-feet. The Full Natural Flow is provided to the nearest ac-ft, and Yuba Water would round DWR's Full Natural Flow to the nearest thousand ac-ft.

2.4.1.3.2 WYTs for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass (Yuba Water's YRDP Proposed Condition WR3)

Yuba Water's YRDP Proposed Condition WR3 defines the calculation of the NYI, to be used to identify the required flow schedule at the Smartsville and at Marysville gages. The schedules in this proposed condition are the same as the schedules described in Exhibits 2, 4 and 5 of the Lower Yuba River Fisheries Agreement. Table 2.4-10 shows the NYI thresholds and associated WYTs.

Table 2.4-10. North Yuba Index Schedules and associated thresholds (YCWA 2017a).

WYT	Thousands of Acre-Feet
Schedule 1	Equal to or greater than 1,400
Schedule 2	Equal to or greater than 1,040 and less than 1,400
Schedule 3	Equal to or greater than 920 and less than 1,040
Schedule 4	Equal to or greater than 820 and less than 920
Schedule 5	Equal to or greater than 693 and less than 820
Schedule 6	Equal to or greater than 500 and less than 693
Conference Year	Less than 500

The NYI is calculated as the active storage in New Bullards Bar Reservoir on September 30 of the previous WY plus New Bullards Bar Reservoir inflow to date plus forecasted inflow[46] through September 30 of the current WY.

2.4.1.3.3 Minimum Flows in the Middle Yuba River Downstream of Our House Diversion Dam and Log Cabin Diversion Dam (Yuba Water's YRDP Proposed Condition AR1)

Under Yuba Water's YRDP Proposed Condition AR1, there would be new flow requirements for the Middle Yuba River downstream of Our House Diversion Dam. The required flow would be determined based on the applicable Smartsville Hydrological Index WYT. Table 2.4-11 shows the

[46] Based on DWR-published Bulletin 120 in each of the months of February, March, April and May, and then thereafter whenever DWR issues an update to the Bulletin 120.

proposed monthly required flows for the Middle Yuba River downstream of Our House Diversion Dam by WYT, as included in YRDP Proposed Condition AR1.

Table 2.4-11. Proposed YRDP flow requirements for the Middle Yuba River downstream of Our House Diversion Dam by Smartsville Hydrological Index WYT.

Month	Wet Water Year (cfs)[1]	Above Normal Water Year (cfs)[1]	Below Normal Water Year (cfs)[1]	Dry Water Year (cfs)[1]	Critically Dry Water Year (cfs)[1]
October 1 – 30	60	60	55	50	40
November 1-30	60	60	55	50	40
December 1 – 31	70	60	55	50	40
January 1 – 31	90	75	70	50	40
February 1- 29	90	75	70	50	40
March 1 – 31	100	90	80	55	45
April 1 – 30	120	100	90	70	60
May 1- 31	120	100	90	70	60
June 1 – 30	120	100	90	70	60
July 1 – 31	100	80	70	60	45
August 1 – 31	80	70	60	50	45
September 1- 30	70	60	55	50	45

[1] Or natural inflow if natural inflow is less.

In addition, YRDP Proposed Condition AR1 would establish new flow requirements for Oregon Creek downstream of Log Cabin Diversion Dam. The required flow would be determined based on the applicable Smartsville Hydrological Index WYT. Table 2.4-12 shows the monthly required flows for Oregon Creek downstream of Log Cabin Diversion Dam by WYT, as included in YRDP Proposed Condition AR1.

Table 2.4-12. Proposed YRDP flow requirements for Oregon Creek downstream of Log Cabin Diversion Dam by Smartsville Hydrological Index WYT.

Month	Wet Water Year (cfs)[1]	Above Normal Water Year (cfs)[1]	Below Normal Water Year (cfs)[1]	Dry Water Year (cfs)[1]	Critically Dry Water Year (cfs)[1]
October 1 – 30	8	8	6	6	6
November 1-30	17	15	15	10	6
December 1 – 31	17	15	15	10	6
January 1 – 31	17	15	15	10	6
February 1- 29	24	19	18	12	12
March 1 – 31	30	30	18	12	12
April 1 – 30	43	43	27	18	18
May 1- 31	43	43	27	18	18
June 1 – 30	43	43	27	18	18
July 1 – 31	25	20	15	10	6
August 1 – 31	13	10	8	6	6
September 1- 30	13	10	8	6	6

[1] Or natural inflow if natural inflow is less.

2.4.1.3.4 Minimum Flows in the North Yuba River Flow Downstream of New Bullards Bar Dam (Yuba Water's YRDP Proposed Condition AR10)

Yuba Water's YRDP Proposed Condition AR10 would require new flow requirements for the North Yuba River downstream of New Bullards Bar Dam. The required flow would be determined based on the applicable Smartsville Hydrological Index WYT. Table 2.4-13 shows the monthly required flows for the North Yuba River downstream of New Bullards Bar Dam by WYT, as included in YRDP Proposed Condition AR10.

Table 2.4-13. Proposed YRDP Flow Requirements for the North Yuba River downstream of New Bullards Bar Dam by Smartsville Hydrological Index WYT (YCWA 2017a).

Month	Wet Water Year (cfs)	Above Normal Water Year (cfs)	Below Normal Water Year (cfs)	Dry Water Year (cfs)	Critically Dry Water Year (cfs)
October 1 - 30	13	13	13	13	7
November 1-30	13	13	13	13	7
December 1 - 31	13	13	13	13	7
January 1 - 31	13	13	13	13	7
February 1- 29	13	13	13	13	7
March 1 - 31	11	12	13	13	7
April 1 - 30	5	5	5	5	5
May 1- 31	5	5	5	5	5
June 1 - 30	5	5	5	5	5
July 1 - 31	11	12	13	13	7
August 1 - 31	11	12	13	13	7
September 1- 30	11	12	13	13	7

2.4.1.3.5 Control Project Spills at Our House Diversion Dam (Yuba Water's YRDP Proposed Condition AR2)

YRDP Proposed Condition AR2 would require Yuba Water to control the rate of spill cessation for flows over Our House Diversion Dam in non-tunnel-closure years. This condition indicates the spill cessation measure would affect flows over Our House Diversion Dam of 600 cfs or less between April 1 and July 31 in Below Normal, Dry and Critically Dry WYs, and between May 1 and July 31 in Wet and Above Normal WYs (WR2). Under these conditions, the Our House Diversion Dam low-level outlet would be used to regulate Middle Yuba River flows downstream of Our House Diversion. The low-level outlet valve would be used to reduce flows by a maximum of 100 cfs every two days for spills between 200 cfs and 600 cfs, and by a maximum of 50 cfs for spills less than 200 cfs.

2.4.1.3.6 Control Project Spills at Log Cabin Diversion Dam (Yuba Water's YRDP Proposed Condition AR12)

The YRDP Proposed Project includes Condition AR12 that would control the rate of spill cessation for flows over Log Cabin Diversion Dam. This condition, AR12, indicates the spill cessation measure would affect flows over Log Cabin Diversion Dam between 100 cfs or less between April 1 and July 31. Under these conditions, the Log Cabin Diversion Dam low-level outlet would be used to regulate Oregon Creek flows downstream of Log Cabin Diversion Dam. The low-level outlet valve would be used to reduce flows by a maximum of 20 cfs every four days.

2.4.1.3.7 Periodically Close Lohman Ridge Diversion Tunnel (Yuba Water's YRDP Proposed Condition AR11)

Under Yuba Water's YRDP Proposed Condition AR11, if DWR's May Bulletin 120 forecast is a Wet, Above Normal or Below Normal WY, as defined in YRDP Proposed Condition WR2, and the subsequent end-of-September New Bullards Bar Reservoir storage is 600,000 ac-ft or greater, the Lohman Ridge Diversion Tunnel would close from October 1 through December 31.

In addition, the condition requires that the Lohman Diversion Tunnel would be closed within 2 business days of when DWR publishes its April Bulletin 120 through September 30 if the Bulletin 120 April Forecast is for a Wet WY, as defined in YRDP Proposed Condition WR2, and the end-

of-March New Bullards Bar Reservoir storage is 775,000 ac-ft or greater. Concurrent with the Lohman Ridge Diversion Tunnel closure, the low-level outlet and fish release valve at Log Cabin Diversion Dam would be fully opened.

2.4.1.3.8 Provide Whitewater Boating Below Our House Diversion Dam (Yuba Water's YRDP Proposed Condition RR3)

Under Yuba Water's YRDP Proposed Condition RR3, Yuba Water would provide weekend boating days from October 1 and March 31 between 600 cfs and 2,000 cfs, as measured at USGS Gage 11408880, according to the schedule given in Table 2.4-14**.**

Table 2.4-14. Proposed YRDP whitewater boating flows below Our House Diversion Dam.

WYT as Defined in YRDP Proposed Condition WR2			Number of Weekend Whitewater Boating Days from October 1 through March 31
DWR's Full Natural Flow at Smartsville for the Full Water Year that Ended on September 30	DWR's Bulletin 120 February Forecast	DWR's Bulletin 120 March Forecast	
Wet, Above Normal, Below Normal or Dry	Any WYT	Wet	8
Wet, Above Normal, Below Normal or Dry	Any WYT	Above Normal	6
Wet, Above Normal, Below Normal or Dry	Any WYT	Below Normal, Dry, or Critically Dry	4
Critically Dry	Wet or Above Normal	Any WYT	2
Critically Dry	Below Normal, Dry, or Critically Dry	Any WYT	0

2.4.1.3.9 Minimum Flows on the Yuba River Downstream of the Narrows 2 Powerhouse and Narrows 2 Full Bypass (Yuba Water's YRDP Proposed Condition AR3)

Under Yuba Water's YRDP Proposed Condition AR3, the required conference year flows for the Yuba River near Smartsville and near Marysville are slightly modified from the Yuba Accord in Conference Years. Table 2.4-15 shows the proposed required flows for the Yuba River near Smartsville and Marysville, based on the WYT schedules defined in YRDP Proposed Condition WR3.

Table 2.4-15. Proposed YRDP flow requirements for the Yuba River downstream of Narrows 2 Powerhouse and Narrows 2 full flow bypass by North Yuba Index Flow Schedule.

Month	Schedule 1 (cfs)	Schedule 2 (cfs)	Schedule 3 (cfs)	Schedule 4 (cfs)	Schedule 5 (cfs)	Schedule 6 (cfs)	Conference Year (cfs)
YUBA RIVER - BELOW NARROWS 2 POWERHOUSE/NARROWS 2 FULL BYPASS (Compliance Point: USGS Streamflow Gage 11418000)							
October 1 – 15	700	700	700	700	600	600	500
October 16 - 30	700	700	700	700	600	600	500
November 1 - 30	700	700	700	700	600	600	500
December 1 - 31	700	700	700	700	550	550	500
January 1- 15	700	700	700	700	550	550	500
January 16 – 31	700	700	700	700	550	550	500
February 1 - 29	700	700	700	700	550	550	500
March 1- 31	700	700	700	700	550	550	500
April 1 – 15	700	700	700	700	600	600	500
April 16 – 30	--	--	--	--	--	--	--
May 1 – 15	--	--	--	--	--	--	--
May 16 – 31	--	--	--	--	--	--	--
June 1 - 15	--	--	--	--	--	--	--
June 16 – 30	--	--	--	--	--	--	--
July 1 – 31	--	--	--	--	--	--	--
August 1 – 31	--	--	--	--	--	--	--
September 1 – 30	700	700	700	700	500	500	500
YUBA RIVER - BELOW NARROWS 2 POWERHOUSE/NARROWS 2 FULL BYPASS (Compliance Point: USGS Streamflow Gage 11421000)							
October 1 - 15	500	500	500	400	400	350	350
October 16 - 30	500	500	500	400	400	350	350
November 1 - 30	500	500	500	500	500	350	350
December 1 - 31	500	500	500	500	500	350	350
January 1- 15	500	500	500	500	500	350	350
January 16 – 31	500	500	500	500	500	350	350
February 1 - 29	500	500	500	500	500	350	350
March 1- 31	700	700	500	500	500	350	350
April 1 - 15	1,000	700	700	600	500	350	300
April 16 - 30	1,000	800	700	900	600	500	245
May 1 - 15	2,000	1,000	900	900	600	500	245
May 16 - 31	2,000	1,000	900	600	400	400	245
June 1 - 15	1,500	800	500	400	400	350*	245
June 16 - 30	1,500	500	500	400	400	350*	150
July 1 - 31	700	500	500	400	400	350*	150
August 1 - 31	600	500	500	400	400	350*	150
September 1 - 30	500	500	500	400	400	350	150

* Modified by the FERC (2019) as part of the FERC Staff Alternative.

2.4.1.3.10 Control Project Ramping and Flow Fluctuation Downstream of Englebright Dam (Yuba Water's YRDP Proposed Condition AR9)

Under Yuba Water's YRDP Proposed Condition AR9, Yuba Water would operate New Bullards Bar Reservoir and Project facilities downstream of Englebright Dam and coordinate on the operations of the Narrows 1 Powerhouse to avoid fluctuations in flow of the Yuba River downstream of Englebright Dam at the Smartsville Gage and daily changes in YRDP operations affecting releases or bypasses of flow downstream of Englebright Dam at the Smartsville Gage. Changes in Yuba River flow downstream of Englebright Dam would not increase at a rate of greater than 500 cfs per hour, nor decrease at a rate in excess of 200 cfs per hour at any point in the year. Also, at no point in the year would flows change, either up or down, by more than 15 percent of the average daily flow once they have been established at a base rate, nor would they be reduced by more than 30 percent of the previous day's flow.

In addition, between September 1 and December 31, and between January 1 and May 31, flow reductions under normal operations (i.e., non-spill management) would be limited according to the flows in Table 2.4-16 and Table 2.4-17. In the two tables, "Base Flow" means the flows other than flows related to emergencies, required by USACE flood control criteria, required to maintain a flood control buffer or for other flood control purposes, bypasses of uncontrolled flows into Englebright Reservoir, uncontrolled spilling, or uncontrolled flows of tributary streams downstream of Englebright Dam.

Table 2.4-16. Maximum flow reductions corresponding to the maximum 5-day average release (Base Flow) that has occurred during the period extending from September 1 through December 31.

Base Flow Range (cfs)	Maximum Allowable Flow Reduction (cfs)
450 – 549	200
550 - 849	250
850 – 1,049	300
1,050 – 1,349	350
1,350 – 1,599	400
1,600 – 1,849	450
1,850 – 2,199	500
2,200 – 2,549	550
2,550 – 2,899	600
2,900 – 3,199	650
3,200 – 3,549	700
3,550 – 4,130	750

Table 2.4-17. Maximum flow reductions corresponding to the maximum 5-day average release (Base Flow) that has occurred during the period extending from January 1 through May 31.

Base Flow Range (cfs)	Maximum Allowable Flow Reduction (cfs)
450 - 499	200
500 - 549	250
550 - 649	300
650 - 849	350
850 – 1,199	400
1,200 – 1,449	450
1,450 – 1,699	500
1,700 – 1,899	550
1,900 – 2,149	600
2,150 – 2,399	650
2,400 – 2,699	700
2,700 – 2,949	750
2,950 – 3,199	800
3,200 – 3,449	850
3,450 – 3,899	900
3,900 – 4,130	950

In addition, between April 1 through July 15, flow reductions under normal operations (i.e., non-spill management) would be limited according to the flows in Table 2.4-18. The previous day's average flow would be based on USGS Gage 11418000.

Table 2.4-18. Maximum flow reductions corresponding to the preceding day average flow that has occurred during the period extending from April 1 through July 15.

Previous Day Average Flow Range (cfs)	Maximum Flow Reduction (cfs)
400-999	79
1000-1999	150
2000-4200	200

2.4.1.3.11 Control Project Spills at New Bullards Bar Dam (Yuba Water's YRDP Proposed Condition AR4)

Under Yuba Water's YRDP Proposed Condition AR4, Yuba Water would implement a spill cessation operation, where spills of 2,000 cfs or less from New Bullards Bar Dam from May 1 through July 31 would be reduced at a rate of 250 cfs per day until spill has ceased.

2.4.1.3.12 Implement Log Cabin and Our House Diversion Dams Sediment Management Plan (Yuba Water's YRDP Proposed Condition GS2)[47]

Under Yuba Water's YRDP Proposed Condition GS2, Yuba Water would operate the low-level outlet valves at Our House and Log Cabin diversion dams during high flow events between October 1 and March 21 to move sediment trapped behind the diversion dams to the Middle Yuba River and Oregon Creek, respectively. These actions would be tied to events when inflows exceed 3,000 cfs at Our House Diversion Dam and 1,000 cfs at Log Cabin Diversion Dam. The low-level outlet at each diversion dam would be opened fully for 9 days, closed halfway on the 10th day, and then fully closed on the 11th day. The low-level outlet can be closed during the 11-day period if flow into the impoundment drops below the capacity of the low-level outlet, which is assumed to be 600 cfs for Our House Diversion Dam and 540 cfs for Log Cabin Diversion Dam.

2.4.1.4 FERC Staff Alternative Modifications to Yuba Water's YRDP Proposal

FERC's (2019) FEIS analyzed the potential effects of continued YRDP operation and recommended conditions for any new license that may be issued by FERC for the YRDP. In addition to Yuba Water's proposal (described above), FERC considered several alternatives and selected the FERC Staff Alternative as the NEPA preferred alternative. FERC chose the Staff Alternative as its preferred alternative because:

1. Issuing a new license for the YRDP would allow Yuba Water to operate the YRDP as an economically beneficial and dependable source of electrical energy for the region (1,374,003 MWh annually);
2. The 361.9 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution, including greenhouse gases;
3. The public benefits of the FERC Staff Alternative would exceed those of the NEPA No Action Alternative; and
4. The environmental measures proposed by Yuba Water and/or modified or recommended by FERC staff would protect and enhance fish and wildlife resources and improve recreation opportunities provided by the YRDP (FERC 2019).

[47] The Log Cabin and Our House Diversion Dams Sediment Management Plan was initially drafted in 2014 and approved by the FERC on September 23, 2014 (148 FERC ¶ 62,227) and amended on March 4, 2016 (154 FERC ¶ 62,158). On August 10, 2018, and supplemented January 29, 2020, and September 18, 2020, Yuba Water filed a revised Plan, which was approved by the FERC on November 10, 2020 (173 FERC ¶ 62,069). A separate CEQA Initial Study/Mitigated Negative Declaration (YCWA 2020) was developed, and mitigation measures were identified, for the revised Plan. The revised Plan (including the previously adopted mitigation measures) is currently being implemented and would remain in effect under the Proposed YRDP Relicensing Project pursuant to YRDP Proposed Condition GS2.

As described in the FEIS (FERC 2019, p. 2-38), "*Under the staff alternative, the project would include most of YCWA's proposed measures…as part of any license issued for the project*." The FERC Staff Alternative (FERC 2019) also included several recommended modifications of Yuba Water's proposal, as well as some additional measures identified by FERC staff, which are briefly described below.

FERC staff recommendations for conditions for any new FERC license for the YRDP are based on the analysis presented in the FEIS (FERC 2019). Appendix C of the FEIS contains draft license articles (specifying measures/conditions, as appropriate) to be included in a new FERC license based upon FERC's analysis in the FEIS. The draft license articles include, or reference, the various environmental measures (or conditions) that were either proposed by Yuba Water and adopted by FERC without modification, proposed by Yuba Water and modified by FERC, or newly identified by FERC as part of the FERC Staff Alternative in the FEIS (FERC 2019).

For this DEIR, FERC's draft license articles are presented in **Appendix 2C** (Yuba Water Expected Conditions in New FERC License). A summary of Yuba Water's 21 proposed implementation plans that are either part of, or referenced in, FERC's draft license articles is provided in Section 2.4.1.5 below, and copies of each implementation plan are provided in Appendix 2B.

2.4.1.4.1 Water Quantity

Modify Yuba Water's proposed Drought Management Plan (YRDP Proposed Condition WR9) to change the condition of drought conditions based on available data specific to the YRDP rather than basing plan implementation on state-wide conditions.

2.4.1.4.2 Aquatic Resources

Maintain summer water temperatures in the lower Yuba River in Schedule 6 years by modifying Yuba Water's proposed minimum flows from the Narrows 2 Powerhouse and the Narrows 2 full bypass (AR3) to include minimum flows of 350 cfs, from June 1 through August 31.

Modify Yuba Water's proposed Aquatic Invasive Species Management Plan (YRDP Proposed Condition AR5) to include monitoring Asian clams at Cottage Creek, Dark Day Boat Launch, and Emerald Cove.

Modify Yuba Water's proposed New Bullards Bar Reservoir Fish Stocking Plan (YRDP Proposed Condition AR6) to include annual consultation with CDFW to determine species of fish appropriate for stocking for recreational purposes.

Modify Yuba Water's proposed Lower Yuba River Aquatic Monitoring Plan (YRDP Proposed Condition AR8) to remove: (1) benthic macroinvertebrate monitoring in the lower river; (2) upstream fish passage monitoring at Daguerre Point Dam; (3) weekly Chinook salmon and steelhead spawning surveys in the lower river; and (4) general monitoring of riparian vegetation cover and community structure.

Develop a Narrows Reach Fish Stranding Prevention Plan for the lower Yuba River, downstream of the Narrows 1 and Narrows 2 Powerhouses, to include conducting fish rescues when stranding is observed, reporting estimates of the number and species of fish stranded and the number of fish

rescued, recording any evidence of harm caused by YRDP facilities or operation, identifying potential operational and/or structural measures that could be implemented to reduce stranding, and reporting requirements for unplanned flow reductions.

Revise minimum streamflows below New Bullards Bar Dam (YRDP Proposed Condition AR10) to use Yuba Water flows in October through May and agency flow recommendations in June through September as listed in CDFW "Recommended Conditions for Fish and Wildlife Protection, Mitigation, and Enhancement," Table 2.4-1 dated August 25, 2017 and shown in Table 2.4-19 below.

Table 2.4-19. Minimum streamflows in cfs in the North Yuba River downstream of New Bullards Bar Dam by month and Water Year Type, the latter of which is defined in Yuba Water's YRDP Proposed Condition WR2.

Month	Wet Water Year	Above Normal Water Year	Below Normal Water Year	Dry Water Year	Critically Dry Water Year
NORTH YUBA RIVER - BELOW NEW BULLARDS BAR DAM (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11413517)					
October 1 - 30	13	13	13	13	7
November 1-30	13	13	13	13	7
December 1 - 31	13	13	13	13	7
January 1 - 31	13	13	13	13	7
February 1- 29	13	13	13	13	7
March 1 - 31	11	12	13	13	7
April 1 - 30	5	5	5	5	5
May 1- 31	5	5	5	5	5
June 1 - 30	60	60	60	60	60
July 1 – 31	40	40	40	40	40
August 1 - 31	40	40	40	40	40
September 1- 30	30	30	30	30	30

Develop a comprehensive LWM enhancement plan that: (1) identifies sources of LWM in the project reservoirs; (2) includes provisions for storing and transporting collected LWM; (3) identifies suitable LWM size classes for placement; (4) identifies locations for placement in the lower Yuba River; (5) details a consultation process to determine LWM placement that includes relevant agencies and whitewater boating interests; and (6) contains a monitoring and mapping process to provide an indication of the stability of these enhancements and inform the need for future placement activities.

2.4.1.4.3 Terrestrial Resources

Modify Yuba Water's proposed Integrated Vegetation Management Plan (YRDP Proposed Condition TR1) to: (1) include treatment and monitoring plans for target non-native invasive species on all lands in the YRDP FERC Project Boundary; (2) apply revegetation measures (Sections 4.1 through 4.5 of the plan) to all lands in the Project Boundary; (3) implement best management practices (BMPs) to protect foothill yellow-legged frog and California red-legged frog habitat when vegetation management activities occur within 300 ft of streams; (4) define BMPs for any pesticide use that is deemed necessary within the YRDP FERC Project Boundary and within 500 ft of known locations of foothill yellow-legged frogs that avoid adverse effects on individuals and their habitats; (5) prohibit the use of pesticides within a 260-ft buffer around the mean high-water mark of aquatic features, unless necessary to ensure project safety; (6) avoid stockpiling and subsequent removal of any fuels, slash, or debris related to hazard tree removal within 1,000 ft of wetlands or aquatic features; and (7) prior to any activities that would result in

vegetation disturbance, conduct surveys for elderberry plants within 165 ft of the activity area and consult with USFWS if elderberry plants are found to determine if additional protective measures are necessary.

Develop a lower Yuba River riparian restoration plan, in consultation with USFWS, CDFW, NMFS, and the South Yuba River Citizen's League (SYRCL) that includes: (1) planting riparian vegetation on 100 ac of floodplain in the lower Yuba River, including no fewer than four separate planting sites; (2) a species list for plantings that includes, at a minimum, cottonwood and willow species; (3) a description of planting methods consistent with methods used at the Hammon Bar restoration site, including planting to ground water depth; (4) success criteria based on survivorship of plantings; (5) monitoring methods and a schedule for determining success; (6) provisions for additional plantings if success criteria are not met; (7) a process and schedule for identifying planting sites; and (8) a reporting schedule.

Modify Yuba Water's proposed Bald Eagle and American Peregrine Falcon Management Plan (TR2) to include surveys for American peregrine falcon eyries every year or until a new eyrie is documented.

Monitor water temperature continuously from April 1 through September 15 for 3 years at two foothill yellow-legged frog breeding sites in the Middle Yuba River downstream from Our House Diversion Dam and at two sites in Oregon Creek downstream of Log Cabin Diversion Dam. Monitoring sites should be selected to represent the upstream and downstream limit of breeding sites in each reach. After 3 years, file a summary report that: (1) summarizes the results of the temperature monitoring; (2) evaluates how often water temperatures fall below 16 degrees Celsius (ºC) during the tadpole development period; and (3) describes any changes in flow releases from Our House and Log Cabin Diversion Dams that may be warranted to address adverse effects on foothill yellow-legged frog reproduction.

Ensure procedures for decontaminating field equipment to prevent the spread of aquatic pests and disease between waterbodies, as described in Yuba Water's proposed Aquatic Invasive Species Monitoring Plan, are applied for activities where equipment is transported from one body of water to another.

2.4.1.4.4 Cultural Resources

Revise Yuba Water's Historic Properties Management Plan (HPMP) (CR1) included in the YRDP AFLA (YCWA 2017a) to include: (1) cultural resources information and consultation results developed after preparation of the 2016 Draft HPMP; (2) updated determinations of National Register of Historic Places (National Register) eligibility of six historic sites (CA-YUB-1751H, CA-YUB-1760H, CA-YUB-1762H, CA-YUB-1768H, CA-YUB-1770H and CA-YUB-1736H) and the New Colgate Penstock; (3) clarification of the description of site CA-SIE-1849H (previously CA-YUB-1733H); and (4) the results of Yuba Water's final supplemental Traditional Cultural Property (TCP) report.

2.4.1.5 Summary of FERC-Approved YRDP Implementation Plans

During the FERC relicensing process, Yuba Water, other agencies, and other stakeholders reached collaborative agreement on more than 30 measures, many of which include detailed

implementation plans. As discussed above, FERC staff recommended modifications to some of the implementation plans as environmental measures were refined through FERC's (2019) NEPA process. Similarly, additional refinements to certain implementation plans have been identified in response to the USFS's 2018 Final FPA Section 4(e) Terms and Conditions, the USFS's 2022 Revised Final FPA Section 4(e) Terms and Conditions, and the Section 7 ESA consultation process between FERC and USFWS (see Sections 2.4.1.6 and 2.4.2.9 above).

Although the agreed-upon measures and associated plans are intended to improve existing conditions and provide benefits overall, some plans do involve construction and operations-related activities that could have the potential to impact environmental resources. Because these collaboratively agreed-upon measures and associated plans are important components of the YRDP Proposed Project, they are listed below.

- Aquatic Invasive Species Management Plan (YCWA 2019a)
- Bald Eagle and American Peregrine Falcon Management Plan (YCWA 2019b)
- Bat Management Plan (YCWA 2016a)
- Drought Management Plan (YCWA 2017b)
- Erosion and Sediment Control Plan (YCWA 2016b)
- Fire Prevention and Response Plan (YCWA 2017c)
- Hazardous Materials Management Plan (YCWA 2019c)
- Historic Properties Management Plan (YCWA 2017d)
- Integrated Vegetation Management Plan (YCWA 2019d)
- Lower Yuba River Aquatic Monitoring Plan (YCWA 2016c)
- New Bullards Bar Reservoir Fish Stocking Plan (YCWA 2019e)
- Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan (YCWA 2018b)
- Log Cabin and Our House Diversion Dams Sediment Management Plan (YCWA 2018c)
- Recreation Facilities Plan (YCWA 2022b)
- Ringtail Management Plan (YCWA 2016d)
- Streamflow and Reservoir Level Compliance Monitoring Plan (YCWA 2017e)
- Transportation System Management Plan (YCWA 2017f)
- Upper Yuba River Aquatic Monitoring Plan (YCWA 2017g)
- Visual Resources Management Plan (YCWA 2016e)
- Water Quality Monitoring Plan (YCWA 2016f)
- Water Temperature Monitoring Plan (YCWA 2016g)

Each of the implementation plans are briefly summarized in Table 2.4-20 to provide context regarding the plan's association with specific measures/conditions, the purpose of the plan, and the types of activities that would be conducted to implement each plan. Copies of each of the 21 implementation plans are included in **Appendix 2B** of this DEIR.

In addition to implementing the activities described in the implementation plans discussed above, the FERC Staff Alternative and FERC's draft license articles in Appendix C of the FEIS (FERC 2019) recommended that Yuba Water also develop and implement three new plans and revise four existing plans at such time as a new FERC license is issued. The implementation plans that are to be developed or revised when a new FERC license for the YRDP is issued include the following.

2.4.1.5.1 New Plans to be Developed when FERC Issues a New License for the YRDP

- Narrows Reach Fish Stranding Prevention Plan (FERC Article 409)
    - Develop new plan to be filed with FERC within 6 months of license issuance.
    - Action – Identify potential operational and/or structural measures (or other actions) that could be implemented to reduce fish stranding in the lower Yuba River from immediately below Englebright Dam to the Narrows 1 Powerhouse.
- Large Woody Material Management Plan (FERC Article 410)
    - Develop new plan to be filed with FERC within one year of license issuance.
    - Action – Place LWM in the lower Yuba River (quantity and location unspecified by FERC).
- Lower Yuba River Riparian Restoration Plan (FERC Article 412)
    - Develop new plan to be filed with FERC within 6 months of license issuance or at least 90 days prior to the start of any ground-disturbing activity, whichever comes first.
    - Action - Plant riparian vegetation on 100 ac of floodplain in the lower Yuba River, including no fewer than four separate planting sites.

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Table 2.4-20. Summary of proposed measures/conditions and FERC-approved implementation plans for the YRDP.

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Aquatic Resources	AR1	Maintain Minimum Streamflows below Our House Diversion Dam and Log Cabin Diversion Dam	Provide minimum flows in the Middle Yuba River from Our House Diversion Dam and Log Cabin Diversion Dam based on the WYT (see USFS Condition 31).	N/A			**X**		Condition 32
Aquatic Resources	AR2	Control Project Spills at Our House Diversion Dam	Gradually reduce spills at Our House Diversion Dam by closing the low-level outlet valve or fish valve. Provide annual report of valve adjustments. (NOTE: This measure would require modifications to the Our House Diversion Dam fish release outlet.)	N/A		**X**			Condition 33
Aquatic Resources	AR3	Maintain Minimum Streamflows at Narrows 2 Powerhouse and Narrows 2 Full Bypass	Make minor modifications to the flow downstream of Englebright Dam during very dry years (referred to as conference years in the Yuba Accord) to maintain summer water temperatures.	N/A			**X**		
Aquatic Resources	AR4	Control Project Spills at New Bullards Bar Dam	Implement a spill cessation operation at New Bullards Bar Dam (NBBD), where spills of 2,000 cfs or less from May 1 through July 31 would be reduced at a rate of 250 cfs per day to protect resident fish populations until the spill has ceased. For spill events greater than approximately 2,000 cfs, when the spill has receded to approximately 2,000, Yuba Water would reduce the spill at a target rate of approximately 250 cfs per day until the spill has ceased (i.e., releases from NBBD are equal to the minimum flow requirement at that time). If a spill of less than approximately 2,000 cfs occurs, Yuba Water would reduce the peak spill at a target rate of approximately 250 cfs per day or a slower rate until the spill has ceased and releases from NBBD are being made to provide flows within 20 percent of the minimum flow requirement downstream of NBBD.	N/A		**X**			
Aquatic Resources	AR5	Implement Aquatic Invasive Species Management Plan	The purpose of the plan (AR5) is to: (1) implement activities to minimize and prevent the introduction and spread of aquatic invasive species (AIS) into and throughout YRDP-affected waters; (2) provide education and outreach to ensure public awareness of AIS effects and management throughout YRDP-affected waters; (3) implement monitoring programs to ensure early detection of AIS; and (4) ensure all YRDP AIS management activities comply with federal and State of California laws, regulations, policies, and management plans, and with USFS directives and orders regarding AIS (see FERC's draft license Article 405 in Appendix C of FERC 2019).	Plan implementation would involve: (1) Implement Public Education Program with signage. (2) Conduct houseboat inspections. (3) Develop BMPs for YRDP O&M and construction. (4) Monitor for quagga and zebra mussels and Asian clams at YRDP reservoirs twice per year. Record incidental observations during fieldwork for other monitoring efforts. Report immediate observations of quagga and zebra mussels and hydrilla to CDFW, USFWS, SWRCB, USFS; 30 days for other invasive species. (5) If detected, implement control/eradication measures for invasive mollusks in coordination with CDFW, USFS, USFWS and SWRCB. (6) Conduct bullfrog population suppression (via hand/net removal) around Moran Cove to protect California red legged frog during the first 5 years of the license. (7) Conduct annual employee training. Revise and update plan as warranted by new information.			**X**		Condition 39
Aquatic Resources	AR5	Aquatic Invasive Species Management Plan - Add Decontamination Protocols	FERC's draft license Article 408 (FERC 2019, Appendix C) states that Yuba Water must implement procedures for decontaminating field equipment to prevent the spread of aquatic pests and disease between waterbodies, as described in the Aquatic Invasive Species Management Plan, are applied to all activities where equipment is transported from one body of water to another.	CDFW's Aquatic Invasive Species Decontamination Protocol was added to the plan as Attachment D. Methods are described for equipment and watercraft decontamination.			**X**	Ensure procedures for decontaminating field equipment to prevent spread of aquatic pests and disease between waterbodies are applied to all activities where equipment is transported from one body of water to another.	

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Aquatic Resources	AR6	Implement New Bullards Bar Reservoir Fish Stocking Plan	The purpose of the plan (AR6) is to establish the fish stocking process, procedures, targets and creel (i.e., angler) surveys that Yuba Water would follow when stocking fish in New Bullards Bar Reservoir (see FERC's draft license Article 406 in Appendix C of FERC 2019).	Plan implementation would involve: (1) Annual stocking of 65,000 fingerling kokanee and 3,000 catchable rainbow trout - stocking would occur in 2 to 4 events between 3/1 and 10/31 each year, and fish would be acquired from sources that would maintain genetic diversity. (2) Conduct creel surveys (from Jun 1 thru Sep 30) at New Bullards Bar Reservoir during License Years 1-3 and every 6 years thereafter. Target species are kokanee and rainbow trout. (3) Evaluate the success of the stocking program in consultation with CDFW. (4) Yuba Water reserves the right to charge a fee to offset fish stocking costs. (5) Prepare and provide annual report to FERC, USFS, CDFW and USFWS. (6) Conduct periodic reviews of stocking numbers and data with USFS, CDFW and USFWS for use in informing the need for potential plan revisions.			**X**	Revise the Reservoir Fish Stocking Plan (filed 12/2/2016) in consultation with CDFW	
Aquatic Resources	AR7	Implement Upper Yuba River Aquatic Monitoring Plan	The purpose of the plan (AR7) is to develop information regarding aquatic resources in the upper Yuba River area (e.g., North Yuba River, Middle Yuba River, mainstem Yuba River and Oregon Creek) in response to changes in flow conditions from the initial FERC license to the new license.	Monitoring activities in the upper Yuba River area would focus on the distribution, abundance, and condition of stream fish (especially rainbow trout), benthic macroinvertebrates (BMI), foothill yellow-legged frogs (FYLF), western pond turtle (WPT), sedimentation at Our House and Log Cabin diversion dam impoundments, stream channel morphology, riparian vegetation, and LWM. For specific details regarding each of the various monitoring activities listed above, including locations, frequency, reporting requirements, etc., see the Upper Yuba River Aquatic Monitoring Plan.	**X**				Condition 43
Aquatic Resources	AR8	Implement Lower Yuba River Aquatic Monitoring Plan	The purpose of the plan (AR8) is to develop information about aquatic resources in the lower Yuba River in response to changes in flow conditions from the initial FERC license to the new license.	Monitoring activities related to anadromous salmonids would include: (1) fish passage at Daguerre Point Dam; (2) annual spawning population abundance; (3) temporal and spatial distributions and use of spawning habitat; (4) abundance, size and timing of emigration; and (5) interactions of anadromous fish with Narrows 2 facilities and operations. Other monitoring activities pertain to riparian vegetation cover and community structure, channel substrate and LWM, and benthic macroinvertebrate (BMI) community structure. See the Lower Yuba River Aquatic Monitoring Plan for specific details regarding each of the various monitoring activities listed above, including locations, frequency, reporting requirements, etc.			**X**		
Aquatic Resources	AR9	Control Project Ramping and Flow Fluctuations Downstream of Englebright Dam	Yuba Water would manage fluctuations in the flow of the lower Yuba River downstream of USACE's Englebright Dam by coordinating operations with the Narrows 1 Powerhouse. Changes in flow would not increase at a rate of more than 500 cfs per hour, or decrease at a rate in excess of 200 cfs per hour. Also, Yuba Water would cap daily flow change to 15 percent of the average daily flow.	N/A		**X**			
Aquatic Resources	AR10	Maintain Minimum Streamflow below New Bullards Bar Dam	Minimum continuous flows in North Yuba River: 60 cfs (6/1-6/30); 40 cfs (7/1-8/31); 30 cfs (9/1-9/30). Shift flows during 3-day periods (6/1-6/3 and 9/28-9/31). Minimum flow in the lower Yuba River during Schedule 6 Water Years of 350 cfs (see FERC's draft license Article 407 in Appendix C of FERC 2019).	N/A			**X**		
Aquatic Resources	AR11	Periodically Close Lohman Ridge Diversion Tunnel	Depending on the WYT (USFS Condition 31) and New Bullards Bar Reservoir water surface elevation, close the tunnel and use the low-level outlet and fish release valves at Log Cabin Diversion Dam.	N/A		**X**			Condition 35
Aquatic Resources	AR12	Control Project Spills at Log Cabin Diversion Dam	Gradually reduce spills at Log Cabin Diversion Dam by closing the low-level outlet valve or fish valve. Provide annual report of valve adjustments. (NOTE: This measure would require modification of the Log Cabin Diversion Dam fish release outlet.)	N/A		**X**			Condition 34
Aquatic Resources		Log Cabin Diversion Dam Fish Release Outlet Modification	Modify the Log Cabin Diversion Dam fish release outlet to allow higher minimum flows from the current range of 8 to 12 cfs to a range of 6 to 43 cfs and install a 38-in. diameter outlet pipe with control valve at same invert elevation as the existing fish release outlet.	N/A			**X**		
Aquatic Resources		Lohman Ridge Diversion Tunnel Intake Modification	Modify the Lohman Ridge Diversion Tunnel intake to allow it to be opened and closed during high flows on the Middle Yuba River to decrease fish entrainment.	N/A					

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Aquatic Resources		Our House Diversion Dam Fish Release Outlet Modification	Modify the Our House Diversion Dam fish release outlet to allow higher minimum flows from the current range of 30 to 50 cfs to a range of 40 to 120 cfs and install a 68-in. diameter outlet pipe with control valve at the same invert elevation as the existing fish release outlet.	N/A		**X**			
Aquatic Resources		Tailwater Depression System at New Colgate Powerhouse	Install tailwater depression system at the New Colgate Powerhouse that would inject air into the turbine discharge chamber to lower the tailwater and allow turbine operation during high flows.	N/A					
Aquatic Resources		Develop and implement a new Narrows Reach Fish Stranding Prevention Plan (FERC Article 409)	FERC's draft license Article 409 (FERC 2019, Appendix C) states that Yuba Water is to develop a new Narrows Reach Fish Stranding Prevention Plan to help reduce the potential for fish stranding following shutdowns of the YRDP Narrows 2 Powerhouse facilities within 6 months of issuance of a new license by FERC.	The new plan must include: (1) potential operational and/or structural measures (or other action) to reduce fish stranding; and (2) procedures for reporting potential fish stranding events to CDFW, NMFS and USFWS if a flow reduction > 500 cfs occurs for more than five minutes.				Develop a new plan for the reach of the lower Yuba River downstream of Englebright Dam to the Narrows 1 Powerhouse	
Aquatic Resources		Develop and implement a new Lower Yuba River Riparian Restoration Plan (FERC Article 412)	FERC's draft license Article 412 (FERC 2019, Appendix C) states that Yuba Water is to develop a new Lower Yuba River Riparian Restoration Plan In consultation with CDFW, NMFS, USFWS and SYRCL within 6 months of issuance of a new license by FERC.	The new plan is to: (1) plant at least 100 acres of riparian vegetation on the floodplain of the lower Yuba River (no fewer than 4 sites); (2) include cottonwood and willow species; (3) describe the planting methods; (4) identify success criteria; (5) describe monitoring methods; (6) provisions for additional plantings (if success criteria not met); (7) reporting schedule; and (8) implementation schedule.				Develop and implement a new lower Yuba River riparian restoration plan	
Aquatic Resources		Develop and implement a new comprehensive Large Woody Material Enhancement Plan for the lower Yuba River (FERC Article 410)	FERC's draft license Article 410 (FERC 2019, Appendix C) states that Yuba Water is to develop and implement a new LWM enhancement plan when a new license is issued by FERC.	In addition to the plan (GS3) for the upper Yuba that was approved in Article 403, a new plan is to be developed for the lower Yuba River including: (1) identify sources LWM; (2) store and transport LWM collected at New Bullards Bar Reservoir downstream to the lower Yuba River; (3) identify suitable size classes of LWM for placement; (4) identify LWM placement locations in the lower Yuba River; (5) consult with agencies and American whitewater on placement plan; and (6) develop a monitoring and mapping process to indicate the stability of these and future enhancements.				Develop and implement a new Large Woody Material enhancement plan	
Aquatic Resources		Reservation of Authority to Prescribe Fishways	FERC may require that Yuba Water construct, operate and maintain fishways in the future (see FERC's draft license Article 402 in Appendix C of FERC 2019).	N/A				FERC may require fishways in the future	
Aquatic Resources		Modifications of 4(e) Conditions in the event of anadromous fish re-introduction	The USFS reserves the right to modify its 4(e) Conditions to respond to any reintroduction of ESA-listed Chinook salmon or steelhead to streams that are on or may have effects on USFS lands.	N/A					Condition 27
Cultural Resources	CR1	Implement Historic Properties Management Plan (HPMP)	Contact Monica Ruth for more information.	Contact Monica Ruth for more information.			**X**	Implement Programmatic Agreement; revise and implement HPMP (see FERC's draft license Article 415 in Appendix C of FERC 2019).	Condition 50
Geology & Soils	GS1	Implement the Erosion and Sediment Control Plan	The plan describes existing Yuba Water and USFS BMPs to control site-specific erosion and sedimentation impacts during routing O&M, new construction and reconstruction of YRDP facilities, and includes emergency erosion control measures/protocols to control sedimentation during severe storm events. The plan would be implemented in coordination with the Integrated Vegetation Management Plan and the Transportation System Management Plan.	Plan implementation would involve: (1) Use of erosion and sediment control BMPs. (2) Develop and implement Stormwater Pollution Prevention Plans (SWPPP). (3) Use USFS BMPs on USFS lands. (4) Monitor New Bullards Bar Reservoir shoreline stability in License Year 1, then every 5 years. Consult with USFS about erosion areas and treatment. (5) Consult with the USFS annually about USFS lands.		**X**			Condition 51

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Geology & Soils	GS2	Implement Log Cabin and Our House Diversion Dams Sediment Management Plan	The purpose of the plan (GS2) is to prescribe procedures for the management of sediment behind Log Cabin Diversion Dam and Our House Diversion Dam to: (1) provide for dam safety and proper functioning of YRDP facilities, especially the fish release and low level outlet valves; and (2) maintain the health of the aquatic environment downstream of the dams by allowing the passage of sediments that occur behind the dams.	Plan implementation would involve: (1) Opening the low-level outlet valve (between Oct 1 and Mar 21) for 9+ days to allow sediment to pass downstream. (2) Implement remedial actions if the fish release valves and/or low-level outlet valves become partially or fully blocked by sediment. (3) Implement planned mechanical removal of sediment (summer/early fall) during low flow periods. (4) Conduct testing of sediment for metals prior to removal. (5) Implement sediment-related BMPs and biological monitoring. (6) Equipment mobilization. (7) Temporary diversion/control or pumping of water to route away from planned excavation of sediment. (8) Removal, disposal of sediment and stockpile stabilization. (9) Equipment demobilization. (10) Emergency mechanical removal of sediment. (11) Conduct monitoring (see Upper Yuba River Aquatic Monitoring Plan). (12) Provide annual reports to FERC, USACE, CDFW, USFS, USFWS, SWRCB and RWQCB. Update plan as warranted in consultation with agencies following License Year 3 effectiveness review.		**X**			Condition 37
Geology & Soils	GS3	Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan	The purpose of the plan (GS3) is to provide guidance (including coordination with USFS) for: (1) Yuba Water's passage of woody material at Our House Diversion Dam on the Middle Yuba River and at Log Cabin Diversion Dam on Oregon Creek; and (2) Yuba Water's annual collection, storage and disposal of woody material in New Bullards Bar Reservoir on the North Yuba River.	Plan implementation would involve: (1) All sizes of LWM > 8 in. in diameter and up to 36 ft in length shall be allowed to pass downstream past the dams. (2) NBBR LWM collection procedures, LWM storage (at Primary Burn Site and Secondary Burn Site), and disposal procedures. (3) Protective measures for special-status wildlife. (4) Reporting requirements.		**X**			Condition 38
Land Use	LU1	Implement Transportation System Management Plan	The purpose of the plan (LU1) is to provide guidance for the rehabilitation and maintenance of YRDP Primary Project Roads (17), Primary Project Trails (2) and Project Recreation Roads (9), with special emphasis on Primary Project Roads and Trails and Project Recreation Roads on NFS land. Numerous road, ditch, and culvert improvements are to be implemented during License Years 1, 3, and 5. In addition to describing road maintenance and management standards that are acceptable to the USFS, the plan also would minimize erosion and damage to natural resources, and provide for traffic safety. USFS revised final 4(e) Condition 19 requires that Yuba Water would be responsible for all maintenance of Project Roads identified in the plan.	The plan describes the scope of improvements needed for YRDP Primary Project Roads (about 12 miles) and Recreation Roads (4.07 miles) design, signage, construction and maintenance, with special emphasis on Primary Project Roads and Trails and Recreation Roads on NFS land. More specifically, the plan: (1) describes rehabilitation actions to bring existing roads up to standards by the end of the fifth full calendar year after license issuance; (2) includes measures to protect sensitive resources; (3) defines applicable road and trail maintenance activities (including frequency) and standards for performing maintenance; and (4) specifies reporting and consultation requirements with the USFS for roads located on NFS land. The plan also addresses maintenance of YRDP roads that are not located on NFS-managed lands and describes mapping and inventory Yuba Water would accomplish, sign placement and maintenance, pavement surface monitoring, and emergency repair procedures. See the YRDP Transportation System Management Plan (LU1) for details on specific road locations, engineering features, site plans, maps and implementation schedule.		**X**			Condition 19
Land Use	LU2	Implement the Fire Prevention and Response Plan	The purpose of the plan (LU2) is to provide: (1) a mechanism for preventing and reporting wildfires to appropriate agencies; (2) information on fire ignition sources in the YRDP project area; and (3) cooperation between Yuba Water and appropriate agencies for investigating fires that may be related to YRDP O&M. The plan describes fire prevention procedures, reporting and safe fire practices for Yuba Water personnel and contractors responsible for conducting O&M of the YRDP, with emphasis on NFS land.	Plan implementation would involve: (1) Obtain written permits prior to blasting, storing explosives, burning, air pollution, fires, welding and cutting. (2) Provide a communication system with USFS and California Department of Forestry and Fire Protection (CALFIRE). (3) Emergency response preparedness (equip Yuba Water/contractor vehicles with axes, saws, shovels, backpack water pump, fire extinguisher, radio, etc.), have water trailer during fire precautionary periods. (4) Consult with USFS TNF and PNF to determine YRDP Project Activity Level during Fire Precautionary Periods. (5) Use Very High fire rating restrictions for emergency repairs involving cutting or welding. (6) Report all fires by calling 911, and cooperate with authorities on wildfire investigations. (7) Consult with USFS annually. Modify plan in consultation with USFS and others.		**X**			Condition 53
Land Use		Land Use and Occupancy	Article 417 specifies the types of non-YRDP activities that Yuba Water can approve in the FERC Project Boundary and the process for seeking FERC approval.	N/A				Implement standard land use article (see FERC's draft license Article 417 in Appendix C of FERC 2019).	

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Recreation	RR1	Implement Recreation Facilities Plan	The plan (RR1) guides the management of public recreation use of the YRDP's existing and new facilities over the term of the new license, and minimizes recreation use impacts to natural, historic and cultural resources.	The plan (RR1) describes Yuba Water's responsibilities regarding routine O&M of recreation facilities, rehabilitation/improvement of existing recreation facilities and construction of new recreation facilities. Numerous enhancements to existing recreation facilities (campgrounds, picnic areas, parking areas, boat launches, overlooks, etc.) are planned, as well as construction of several new facilities, including: Kelly Ridge and Shadow Ridge Campgrounds, Cottage Creek Picnic Site, Dark Day RV Dump Station and Entrance Station, New Colgate Powerhouse Access, and West Shoreline Trail. Other improvements address the potable water supply system, the wastewater system (e.g., restrooms, septic, floating comfort stations, etc.), recreation trails, circulation and spur roads, and signage, among other features. See the Recreation Facilities Plan for site-specific details and the master implementation schedule.		**X**			Condition 46
Recreation	RR2	Provide Recreation Flow Information	Provide forecasts for flows at least monthly in Middle Yuba River downstream of Our House Diversion Dam, in Oregon Creek downstream of Log Cabin Diversion Dam, North Yuba River downstream of New Bullards Bar Dam, Yuba River at Smartsville.	N/A			**X**	Include flow forecasts (see FERC's draft license Article 414 in Appendix C of FERC 2019).	Condition 47
Recreation	RR3	Provide Whitewater Boating Below Our House Diversion Dam	Provide weekend whitewater boating flows (600 -2,000 cfs) for October through March based on WYT (Condition 31). Notify FERC annually of compliance with requirements. If the Lohman Ridge Diversion Tunnel must be modified to provide flows, seek approval for modification and modify by License Year 2.	N/A		**X**			Condition 48
Recreation		Safety Plan and Construction Inspections (USFS lands)	Develop and implement Safety During Construction Plans for work on USFS land. Inspect construction sites daily. Inspect structural improvements regularly.	N/A					Condition 24
Terrestrial Resources	GEN2	Annual Review of Special-Status Species Lists and Assessment of New Species on NFS Lands	Annually review special status species in consultation with the USFS.	N/A	**X**				Condition 30
Terrestrial Resources	GEN3	Provide Environmental Awareness Training to Employees	Provide annual environmental and cultural resource awareness training to employees.	N/A	**X**				Condition 28
Terrestrial Resources	TR1	Implement Integrated Vegetation Management Plan	The plan provides guidance for the management of vegetation (with the exception of aquatic invasive plants) and hazard reduction activities related to YRDP O&M, as well as non-native invasive plants (NNIP), revegetation and vegetation management in sensitive areas within the FERC Project Boundary (see FERC's draft license Article 411 in Appendix C of FERC 2019).	Specific activities described in the plan include: (1) management and monitoring actions to prevent the introduction, and establishment and spread of NNIP into new areas; (2) control and localized eradication of known infestations of NNIP; (3) the restoration of native vegetation in areas disturbed by YRDP activities; (4) the protection of sensitive areas; and (5) implementation of YRDP-related vegetation management and hazard reduction activities using BMPs. YRDP O&M actions address routine maintenance, fuels management, road right-of-way management, recreation area management, pesticide use, and revegetation procedures.The 2019 plan (TR1) includes protections for California red-legged frog, foothill yellow-legged frog, VELB, and aquatic resources. See the Integrated Vegetation Management Plan for details.			**X**		Condition 40
Terrestrial Resources	TR2	Implement Bald Eagle and American Peregrine Falcon Management Plan	The purpose of the plan (TR2) is to establish and implement protective guidelines and activities that would ensure that YRDP O&M, as well as YRDP recreation activities, do not result in "take" of bald eagles and American peregrine falcons (including eggs and nests) (see FERC's draft license Article 413 in Appendix C of FERC 2019).	Plan implementation would involve: (1) Conduct annual surveys of bald eagle roosts and nests. Conduct annual surveys of peregrine falcon eyries. (2) Establish buffer zones around active nests/eyries and restrict activities in those buffers during nesting periods. Install water (buoys/signage) and land (fencing/signage) barriers around known occupied nests to prevent disturbance. (3) Record presence of other special-status raptors during annual surveys. (4) Conduct annual employee awareness training. (5) Revise and update plan as warranted by new information.			**X**	Revise to include annual survey for falcon eyries.	Condition 41
Terrestrial Resources	TR3	Implement Ringtail Management Plan	The plan (TR3) is intended to provide for the protection of ringtail at YRDP facilities (e.g., New Colgate Powerhouse, switchyard and administrative building adjacent to the New Colgate Powerhouse, Narrows 2 Powerhouse) where ringtail have been observed to ensure that YRDP O&M is consistent with the "Fully Protected" status of this species.	Plan implementation would involve: (1) Install protective devices at the New Colgate Powerhouse and Narrows 2 powerhouse switchyards to protect ringtail from electrocution. (2) Install ringtail exclusion devices at YRDP structures and inspect quarterly or biannually. (3) Limit access to ringtail attractants in YRDP facilities. (4) Conduct annual employee awareness training on plan requirements. (5) Prepare and provide annual report to CDFW.		**X**			

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Terrestrial Resources	TR4	Implement Bat Management Plan	Provide guidance for the protection of bats at YRDP structures (e.g., powerhouses, storage buildings, valve houses, and dams), recreation facilities, or other structures where Yuba Water staff has a routine presence that may be used as a roosting structure by bats.	Plan implementation would involve: (1) Conduct survey to identify bats, roosts and/or signs of roosting at YRDP facilities. Year 1: daytime visual assessment and nighttime emergence survey of YRDP structures (July 1 – August 31). (2) Install humane exclusion devices/screens in YRDP buildings with frequent human use (November 1 – February 28); inspect devices after 6 months and then annually. (3) Inspect facilities every 2 years after installation to ensure no new roosts. (4) Inspect recreation facilities restrooms annually for bat use. (5) Conduct annual employee awareness training. (6) Provide annual report to CDFW, USFS, USFWS. Update plan as warranted in consultation with CDFW, USFS, USFWS.		**X**			Condition 42
Terrestrial Resources		Pesticide-Use Restrictions USFS lands	Obtain USFS approval for pesticide and herbicide use on USFS land.	N/A					Condition 23
Terrestrial Resources		Unattended Construction Equipment (USFS lands)	Do not leave unattended construction equipment on USFS land without USFS approval.	N/A					Condition 25
Visual Resources	VR1	Implement Visual Resource Management Plan	The plan (VR1) provides guidance for the management of visual resources within the FERC Project Boundary, with special emphasis on visual resources on NFS land. The plan describes how to bring YRDP facilities into compliance with USFS Visual Quality Objectives (VQOs) and uses mitigation and enhancement measures to better meet USFS objectives and integrate YRDP facilities into the visual environment on NFS land.	Measures identified by Yuba Water and USFS to be completed within three years after license issuance include: (1) Emerald Cove Marina fuel storage tanks - paint gray/green or brown to blend with surrounding. (2) Gate controls and housings on New Bullards Bar Dam - paint them green or similar. (3) Sunset Vista Point - manage vegetation to maintain view from site. (4) Implement a visual review process for projects with the USFS and develop Visual Resource Protection Plans for future modification(s) of YRDP facilities on NFS land. (5) Consult with USFS annually on visual quality activities on NFS land within the FERC Project Boundary. (6) Consider plan revisions with USFS, as needed, when significant changes in the existing conditions occur.		**X**			Condition 49
Water Quantity		Auxiliary Flood Control Outlet (i.e., ARC Spillway)	Install a new flood control outlet at New Bullards Bar Dam to improve flood management.	N/A					
Water Resources	WR1	Implement the Hazardous Materials Management Plan	The plan addresses the storage, use, transport and disposal of hazardous materials that would be used within the FERC Project Boundary for O&M purposes, with emphasis on NFS land, and describes how Yuba Water would manage hazardous materials. The plan provides a description, by location, of hazardous materials that may be used, stored or transported for routine YRDP O&M.	Plan implementation would involve: (1) Train Yuba Water staff on procedures to reduce risk and respond to spills. (2) Maintain powerhouse oil sumps. (3) Implement BMPs including: (1) refueling vehicles and equipment in areas where spills cannot enter lakes and streams; and (2) storing potentially hazardous materials away from waterways. (4) Implement spill prevention measures during maintenance work and new construction. (5) Meet with USFS annually. Modify plan in consultation with USFS and others.		**X**			Condition 22
Water Resources	WR2	Determine WYTs for Conditions Pertaining to Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam	Classify WYTs based on flows in the Middle Yuba River during months of February, March, April, May, and October.	N/A		**X**			Condition 31
Water Resources	WR3	Determine WYTs for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass	Determine WYTs for related measures pertaining to Narrows 2 Powerhouse and Narrows 2 full bypass using the North Yuba Index.	N/A		**X**			
Water Resources	WR4	Implement Streamflow and Reservoir Level Compliance Monitoring Plan	The purpose of the plan (WR4) is to describe how Yuba Water documents compliance with streamflow and reservoir level requirements in the new FERC license. The plan describes the locations where Yuba Water monitors compliance, the equipment used (including deployment, data collection frequency, operation and calibration), data retrieval, QA/QC procedures, and data storage processes.	Plan implementation would involve: (1) Maintain 10 USGS gages to monitor project releases, reservoir elevations, Lohman Ridge Diversion Tunnel and Camptonville Diversion Tunnel flows. (2) Estimate and report New Bullards Bar Dam primary spillway releases. (3) Modify three USGS gages to accommodate new license flows. (4) Change the method for reporting releases from New Bullards Bar Reservoir. (5) Prepare and provide annual reports to FERC. (6) As needed, review, update, and/or revise the Plan in consultation with USFS, USGS, DOI, USFWS, CDFW, and the SWRCB.		**X**			Condition 36
Water Resources	WR5	Maintain New Bullards Bar Reservoir Minimum Pool Elevation	Maintain a minimum pool elevation in New Bullards Bar Reservoir at 1,730 ft or higher (see FERC's draft license Article 404 in Appendix C of FERC 2019).	N/A		**X**			

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
Water Resources	WR6	Operate New Bullards Bar Reservoir for Flood Control	Yuba Water would operate YRDP reservoirs (e.g., New Bullards Bar Reservoir) for flood control in accordance with rules prescribed by USACE.	N/A		**X**			
Water Resources	WR7	Implement Water Temperature Monitoring Plan	The purpose of the plan (WR7) is to describe the water temperature monitoring to be conducted in YRDP reservoirs, YRDP impoundments and YRDP-affected stream reaches of the North, Middle, and mainstem Yuba rivers, and in Oregon Creek.	The plan describes the methods that would be used to monitor and analyze water temperature, which would then be used to compare post-license water temperature information with pre-license issuance information. For specific details regarding the 23 monitoring sites, sampling locations, frequency, reporting, etc., see the Water Temperature Monitoring Plan.	**X**				Condition 44
Water Resources	WR8	Implement Water Quality Monitoring Plan	The purpose of the plan (WR8) is to describe the water quality monitoring activities to be conducted in YRDP reservoirs and impoundments and in YRDP-affected reaches of the North, Middle, and mainstream Yuba rivers, and in Oregon Creek.	The plan focuses on four general water quality parameters, including: (1) *in situ* (i.e., direct monitoring in water); (2) general water chemistry (e.g., samples collected for laboratory analysis); (3) recreation-related water quality monitoring (e.g., total coliform, fecal coliform, *e coli*, oil & grease, etc.); and (4) bioaccumulation (i.e., metals accumulation in fish (e.g., rainbow trout, bass)). For specific details regarding monitoring activities, locations, frequency, etc., see the Water Quality Monitoring Plan.	**X**				Condition 45
Water Resources	WR9	Implement Drought Management Plan	The purpose of the plan (WR9) is to facilitate approval of variances to FERC license conditions so that drought management measures that require a variance to license conditions may be implemented in a timely, efficient and effective manner. Implementation of the Drought Management Plan by Yuba Water is discretionary and would be determined based upon specific considerations described in Section 2.1 of the plan.	Drought management options that may require a variance to one or more FERC license conditions include relief from minimum flow requirements (AR3), flow fluctuation criteria (AR9), control of YRDP spills at Our House and Log Cabin diversion dams (AR2), NBBR minimum pool operations (WR5), relief from whitewater boating recreation flows (RR3), among others. Drought management options would be determined based on specific conditions.FERC would require modification of the plan in consultation with various agencies (CDFW, USFWS, NMFS, USFS, SWRCB) regarding drought triggers, consultation with agencies during droughts, and the specific license requirements that could have variances.			**X**		Condition 53
General		Modify the FERC Project Boundary to better represent lands required for O&M around YRDP reservoirs	Change the existing FERC Project Boundary around the YRDP reservoir and impoundments from the surveyed coordinates to a contour located above the normal water surface elevation. Specific changes to the existing Project Boundary would reduce the shoreline buffer along YRDP impoundments to 30 ft where YRDP infrastructure and recreation facilities are not located along the shoreline.	N/A		**X**			
General		Modify the FERC Project Boundary to make corrections to the existing Project Boundary	Specific changes to the existing Project Boundary would: (1) include additional lands necessary for current and future YRDP O&M and recreation development; and (2) remove lands that do not have YRDP facilities and where there are no YRDP-related uses necessary for O&M.	N/A		**X**			
General		USFS Reservation of Authority, Resource Plan Modification and Variance Requests	Allows the USFS to modify its conditions. Requires Yuba Water to consult for non-emergency variances from conditions.	N/A					Condition 1
General	GEN1	Organize Ecological Group and Host Meetings	Establish Ecological Group with agencies and others. Meet with group at least annually to review license compliance, environmental studies and reports for previous year, anticipated reports/studies for the upcoming year.	N/A	**X**				Condition 3
General	GEN4	Develop and Implement a Coordinated Operations Plan to Assure Licensee Compliance with the New License for the YRDP	Develop and Implement a Coordinated Operations Plan to Assure Licensee's Compliance with the New License for the YRDP.		**X**				
General	GEN5	Special-Status Species on NFS Lands	Prepare a biological evaluation for USFS special status species, and critical habitat prior to construction of new YRDP facilities on USFS land.		**X**				Condition 29
General	LU1	Use of National Forest System Roads for Project Access	USFS Condition 19 states that Yuba Water must implement the Transportation System Management Plan for locations on, or directly affecting NFS lands (including implementation of numerous road, ditch, culvert improvements in License Years 1, 3, 5 described in the plan).						Condition 19
General		Access (USFS lands)	The USFS can use, or allow the use of, its lands for any purpose that does not conflict with the Federal Power Act or license.						Condition 14

Table 2.4-20. (Continued)

Category	Measures/Conditions*		Purpose/Synopsis	Implementation Plan Summary of Activities	FERC 2019 FEIS				USFS 2022 Revised Final FPA Section 4(e) Conditions
	Yuba Water Designation	Name/Description			Measure Rejected	Measure Retained	Measure Modified	New Measure (FERC Staff Recommended)	
General		Access by the United States (USFS)	The United States has unrestricted use of any road over which Yuba Water has control within the YRDP project area in connection with the protection, administration, management, and utilization of Federal lands or resources.						Condition 20
General		Compliance with Regulations (USFS lands)	Comply with all federal, state, local, and USFS regulations.						Condition 8
General		Crossings (USFS lands)	Yuba Water must maintain USFS crossings for roads and trails that intersect the right-of-way occupied by linear YRDP features (powerline, penstock, ditch and pipeline).						Condition 15
General		Damage to Land, Property, and Interests of the United States (USFS lands)	Protect land, property, and interests of the United States from damage, including fire associated with operation of the YRDP.						Condition 12
General		Existing Claims (USFS lands)	The United States is not subject to claims/rights affecting the License.						Condition 7
General		Ground Disturbing Activities (USFS lands)	Yuba Water must consult per NEPA prior to ground-disturbing activities.						Condition 18
General		Indemnification (USFS lands)	Indemnify the United States for claims against Yuba Water associated with the YRDP.						Condition 11
General		Maintenance of Improvements on or affecting National Forest System Lands	Maintain YRDP facilities and lands consistent with USFS standards.						Condition 6
General		Protection of United States Property (USFS lands)	Protect United States property from damage.						Condition 10
General		Risks and Hazards on National Forest System Lands	Report risks and hazards on USFS lands to USFS and consult with USFS to resolve issues.						Condition 13
General		Road Use (USFS lands)	Yuba Water would restrict vehicle use to roads and designated access routes (see Transportation System Management Plan).						Condition 21
General		Signs (USFS lands)	Yuba Water must obtain USFS approval of public safety signage and sign locations.						Condition 17
General		Review of Improvements on National Forest System Lands	If YRDP project use expands to include additional USFS land outside of the current Project Boundary, obtain a special use permit.						Condition 26
General		Surrender of License or Transfer of Ownership (USFS lands)	If the license is surrendered, restore USFS lands. If the license is transferred, ensure transferee could restore lands if need be.						Condition 9
General		Surveys, Land Corners (USFS lands)	Yuba Water would avoid disturbance and damage to public land survey monuments, private property corners, and USFS boundary markers.						Condition 16
General		USFS Annual Consultation	Meet with the USFS annually and invite other agencies to attend. Provide annual O&M plan, report on compliance with conditions.						Condition 2
General		USFS Approval of Changes	Obtain approval from USFS for changes to existing facilities on USFS land.						Condition 5
General		USFS Approval of Final Designs	Obtain approval from USFS for design plans for facilities on USFS land.						Condition 4
General	GEN6	Review of Improvements on NFS Lands	Obtain approval from USFS for changes to existing facilities on USFS land.		**X**				Condition 26

For the purposes of this table, cells in the column titled "Yuba Water Designation" are blank of a measure/condition was proposed by a party (e.g., FERC, USFS) other than Yuba Water.

2.4.1.5.2 Existing Plans to be Revised when FERC Issues New License for the YRDP

Bald Eagle and American Peregrine Falcon Management Plan (FERC Article 413)

- Revise existing plan and file with FERC within 6 months of license issuance.

Drought Management Plan (USFS 4(e) Condition 53)

- For the protection of USFS resources, finalize the plan in consultation with USFS, SWRCB, other government agencies and interested parties and file with FERC within one year of license issuance. Implement plan after USFS approval and other approvals, if necessary.

Historic Properties Management Plan (FERC Article 415)

- Revise existing plan and file with FERC within 6 months of license issuance.

Integrated Vegetation Management Plan (FERC Article 411)

- Revise existing plan and file with FERC within 6 months of license issuance, or at least 90 days prior to the start of any ground-disturbing activity, whichever comes first.

New Bullards Bar Reservoir Fish Stocking Plan (FERC Article 406)

- Revise existing plan and file with FERC within 6 months of license issuance.

For the purposes of this DEIR, although these are part of the YRDP Relicensing Project, it is not possible to ascertain the specific activities that could be identified for implementation or the resultant potential impacts from each of these seven new and revised plans. Thus, additional CEQA compliance may be required in the future, after a new FERC license is issued and the respective plans are developed/revised and approved by FERC.

Developing a lower Yuba River riparian restoration plan, as FERC staff recommend, would include provisions for planting of cottonwood and willow on 100 ac of currently unvegetated floodplains at a minimum of four different locations. These riparian planting efforts would create additional habitat complexity and diversity, and provide increases in canopy structure, sediment retention, organic input into the lower Yuba River, and seed sources for further expansion of riparian vegetation species (FERC 2019). Riparian enhancement also would increase the extent of riparian vegetation on the lower Yuba River, providing for increased wetland habitat to benefit waterfowl, amphibians, and other terrestrial wildlife.

To accomplish riparian planting that meets FERC's goal of 100 ac, or some portion thereof, Yuba Water plans to address some component of FERC's riparian plan by adding additional riparian vegetation and placing LWM in areas that are either within or adjacent to habitat enhancement projects on the lower Yuba River that are currently in the planning stages or are in progress. Examples of potential Yuba River habitat enhancement projects that could be expanded to address a component of FERC's plan include: (1) the Yuba River Canyon Restoration Project (USFWS and Yuba County 2016); (2) the Hammon Bar Riparian Enhancement Project (SYRCL 2013); (3) Yuba Water's Narrows 2 Large Woody Material Mitigation Project (YCWA 2018a; YCWA 2022c); (4) the Hallwood Side Channel and Floodplain Restoration Project (YCWA 2022d; NMFS

2017); (5) the Lower Long Bar Habitat Enhancement Project (USFWS and Yuba County 2021); and (6) the Upper Long Bar Habitat Enhancement Project (USFWS and Yuba County 2021). Because Yuba Water is already identified as a partner on several of these habitat enhancement initiatives, the potential exists for building upon the habitat enhancement work that is currently occurring along the river by identifying opportunities for creating an expansion of cottonwood and willow habitat that could be provided by a Lower Yuba River Riparian Planting Plan.

Consistent with FERC's (2019) conclusions, implementation of a riparian planting plan would provide overall beneficial impacts to various aquatic resources (e.g., fisheries, amphibians, wildlife, etc.). However, it is also recognized that there may be some degree of potential temporary and localized construction-related impacts, including disturbance of staging areas, creation of transport roads and/or river access, as well as increases in turbidity, among others. For the purposes of this DEIR, potential impact considerations related to LWM placement and riparian planting evaluated in the aforementioned projects and NMFS BOs (e.g., NMFS 2020; NMFS 2017; NMFS 2014) (which likely would be representative of the activities to be conducted as part of a Lower Yuba River Riparian Restoration Plan and a Large Woody Material Management Plan) are incorporated into the appropriate resource-specific analyses of the YRDP Proposed Project, to the extent feasible.

2.4.1.6 YRDP Federal Power Act Section 4(e) Conditions

Section 4(e) of the FPA (16 U.S.C. § 797(e)) authorizes FERC to issue hydropower licenses and sets forth some basic parameters for the application and review process, including a requirement that the Chief of Engineers and the Secretary of the Army approve plans for any hydropower project "*affecting the navigable capacity of any navigable waters of the United States*" prior to issuance of the license. Section 4(e) of the FPA provides that any license issued by FERC "*for a project within a federal reservation shall be subject to and contain such conditions as the Secretary of the responsible federal land management agency deems necessary for the adequate protection and use of the reservation*." According to these provisions, USACE and USFS can issue 4(e) Conditions that meet the requirements of the law and must be included in any license issued by FERC, regardless of whether FERC includes the condition in its staff alternative (FERC 2019).

In accordance with Section 4(e) of the FPA and 18 C.F.R. 5.25(d), the USFS filed with FERC Revised Final FPA Section 4(e) Terms and Conditions for the YRDP on December 2, 2022. The USFS previously filed Final FPA Terms and Conditions and Recommendations on September 27, 2018. A subsequent January 31, 2020 FERC filing confirmed USFS approval of updates of five resource management plans filed by Yuba Water in November 2019. The USFS's December 2, 2022 revised terms and conditions directly incorporated references to those revised resource management plans (e.g., Recreation Facilities Plan, New Bullards Bar Fish Stocking Plan) along with updated standardized language for both Administrative and Resource Conditions. The USFS's December 2, 2022 filing included the Revised Final Section 4(e) terms and conditions to be included in the new FERC license and found to be necessary for the protection and utilization of the TNF and the PNF.

USFS's December 2, 2022 filing of Revised Final Section 4(e) Terms and Conditions was comprised of two parts. Part I included administrative conditions deemed necessary for the administration of NFS lands. Part II included specific resource requirements for protection and

utilization of NFS lands. The USFS's FPA Revised Final Section 4(e) Terms and Conditions are listed below. Additional details about each of the 53 USFS 4(e) Conditions are provided in Appendix 2C (Yuba Water Expected Conditions in New FERC License) of this DEIR.

- Part I: Administrative Conditions
    - Condition No. 1 – Reservation of Authority, Resource Plan Modification, and Variance Requests
    - Condition No. 2 – Consultation
    - Condition No. 3 – Organize Ecological Group and Host Meetings
    - Condition No. 4 - Forest Service Approval of Final Design
    - Condition No. 5 – Approval of Changes
    - Condition No. 6 – Maintenance of Improvements on or Affecting National Forest System Lands
    - Condition No. 7 – Existing Claims
    - Condition No. 8 – Compliance with Regulations
    - Condition No. 9 – Surrender of License or Transfer of Ownership
    - Condition No. 10 – Protection of United States Property
    - Condition No. 11 – Indemnification
    - Condition No. 12 – Damage to Land, Property, and Interests of the United States
    - Condition No. 13 – Risks and Hazards on National Forest System Lands
    - Condition No. 14 – Access
    - Condition No. 15 – Crossings
    - Condition No. 16 – Surveys, Land Corners
    - Condition No. 17 – Signs
    - Condition No. 18 – Ground Disturbing Activities
    - Condition No. 19 – Use of National Forest System Roads for Project Access
    - Condition No. 20 – Access by the United States
    - Condition No. 21 – Road Use
    - Condition No. 22 – Hazardous Materials Management Plan
    - Condition No. 23 – Pesticide-Use Restrictions on National Forest System Lands
    - Condition No. 24 – Safety Plan and Construction Inspections
    - Condition No. 25 – Unattended Construction Equipment

- Condition No. 26 – Review of Improvements on National Forest System Lands
- Condition No. 27 – Modifications of 4(e) Conditions in the Event of Anadromous Fish Re-introduction

- Part II: Resource Conditions
  - Condition No. 28 – Environmental Awareness Training to Employees
  - Condition No. 29 – Special-Status Species
  - Condition No. 30 – Annual Review of Special-Status Species Lists and Assessment of New Species on Federal Land
  - Condition No. 31 – Water Year Types for the Middle Yuba River and Oregon Creek
  - Condition No. 32 – Minimum Streamflows for the Middle Yuba River and Oregon Creek
  - Condition No. 33 – Control Project Spills at Our House Diversion Dam
  - Condition No. 34 – Control Project Spills at Log Cabin Diversion Dam
  - Condition No. 35 – Periodically Close Lohman Ridge Diversion Tunnel
  - Condition No. 36 – Streamflow and Reservoir Level Compliance Monitoring Plan
  - Condition No. 37 – Log Cabin and Our House Diversion Dams Sediment Management Plan
  - Condition No. 38 – Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan
  - Condition No. 39 – Aquatic Invasive Species Management Plan
  - Condition No. 40 – Integrated Vegetation Management Plan
  - Condition No. 41 – Bald Eagle and American Peregrine Falcon Management Plan
  - Condition No. 42 – Bat Management Plan
  - Condition No. 43 – Upper Yuba River Aquatic Monitoring Plan
  - Condition No. 44 – Water Temperature Monitoring Plan
  - Condition No. 45 – Water Quality Monitoring Plan
  - Condition No. 46 – Recreation Facilities Plan
  - Condition No. 47 – Recreation Flow Information
  - Condition No. 48 – Whitewater Boating Below Our House Diversion Dam
  - Condition No. 49 – Visual Resource Management Plan
  - Condition No. 50 – Historic Properties Management Plan
  - Condition No. 51 – Erosion and Sediment Control Plan
  - Condition No. 52 – Fire Prevention and Response Plan
  - Condition No. 53 – Drought Management Plan

2.4.1.7 Section 18 of the Federal Power Act

New licenses for the YRDP and Narrows Project would be subject to numerous requirements under the FPA, including Section 18. Section 18 of the FPA states that FERC must require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of Commerce or the Interior. Interior, by letter filed with FERC on August 25, 2017, requested that a reservation of authority to prescribe fishways under Section 18 be included in any license issued for the YRDP.

2.4.1.8 Recommended CWA Section 401 Certification Conditions for New YRDP FERC License

On December 30, 2024, Yuba Water filed an application for a WQC with the SWRCB in support of Yuba Water's application for a new FERC license for the YRDP. After filing the request, Yuba Water received a confirmation email from the SWRCB that the application was received. In anticipation of filing the WQC application, Yuba Water and the SWRCB participated in a pre-filing meeting on October 10, 2024 consistent with the regulatory requirements in 40 C.F.R. § 121.4.

Between October 2024 and January 2025, SWRCB staff participated in a series of coordination meetings where Yuba Water, CDFW, and NMFS presented a suite of recommended Section 401 WQC Conditions for the new YRDP FERC License (**Appendix 2E**). The proposed WQC Conditions address multiple operations-related considerations, including water year type classification, minimum instream flows, ramping rates to protect anadromous salmonids and riparian seedling recruitment, spill reduction, drought management, coordinated operations with the Narrows Project and operation of the New Colgate Powerhouse intakes,[48] among others. Other proposed WQC Conditions address riparian restoration, water quality (e.g., mercury management) and water temperature monitoring, aquatic invasive species management, LWM management, sediment management, and recreation facilities management and whitewater boating.

The proposed WQC Conditions presented in Appendix 2E were collaboratively developed by Yuba Water in coordination with CDFW and NMFS as recommended Section 401 WQC Conditions,[49] with the exception of the modification provisions in proposed WQC Conditions 1(D), 12 and 24. *NMFS and CDFW do not take a position on modification provisions in Conditions 1(D), 12 and 24, which they believe should be developed by the State Water Board and YWA.* NMFS and CDFW support Yuba Water's recommendation that the SWRCB adopt these conditions for the new YRDP FERC License and acknowledge that Yuba Water and the SWRCB may engage in further discussions to develop appropriate modification provisions.

The suite of recommended Section 401 WQC Conditions for the new YRDP FERC License are included as part of the YRDP Relicensing Project that is evaluated in this DEIR.

[48] Proposed WQC Condition 7 (Operation of New Colgate Powerhouse Intakes) would require the use of the New Bullards Bar Dam (NBBD) Upper Intake during spring (March, April and May) and the Lower Intake for the remainder of the year. This specific operation of the New Colgate Powerhouse Intakes also is included under Alternative 1.

[49] Other than the proposed modification provisions, the initial basis of the proposed WQC conditions was derived from the conditions that the SWRCB developed for the July 2020 WQC, which the SWRCB set aside in 2024.

2.4.1.9 FERC's Form L-5 Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States

FERC's Form L-5 Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters and Lands of the United States[50] includes 37 standard terms and conditions used by FERC in licenses for constructed projects affecting navigable waters and lands of the United States. Specific details about each of the 37 Form L-5 Terms and Conditions are provided in Appendix 2C (Yuba Water Expected Conditions in New FERC License) of this DEIR and would be expected to be applicable to both the YRDP and the Narrows Project.

2.4.1.10 YRDP Endangered Species Act Section 7 Consultation

2.4.1.10.1 USFWS

On May 31, 2018, FERC submitted a letter to the USFWS requesting concurrence with FERC's determination that the proposed action (i.e., relicensing the YRDP), as proposed with FERC staff-recommended measures and mandatory conditions, *"may affect, but is not likely to adversely affect"* the valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)* and the California red-legged frog *(Rana draytonii),* as well as designated critical habitat for the California red-legged frog under the federal ESA.

On June 21, 2018, the USFWS responded to FERC's request and concurred with FERC's determination that the YRDP may affect, but is not likely to adversely affect, valley elderberry longhorn beetle and California red-legged frog. USFWS also concluded that the YRDP is not likely to adversely affect the primary constituent elements of critical habitat for the California red-legged frog (USFWS 2018). The USFWS concurrence letter for the YRDP does not authorize take of listed species. As described in the June 21, 2018 letter, over the course of the FERC relicensing process, the USFWS has worked collaboratively and provided ongoing technical assistance to Yuba Water and to FERC to identify conservation measures that should be implemented with a new license to avoid or minimize impacts to federally-listed species and their critical habitat. The specific measures that were identified by USFWS in their June 21, 2018 letter of concurrence as being protective of listed species and critical habitat are summarized below.

- Valley Elderberry Longhorn Beetle
    - Implement Yuba Water's proposed Integrated Vegetation Management Plan (TR1) that includes measures for controlling non-native plant species, protecting special-status species, and revegetating disturbed areas, with a modification that prior to any activities that would result in vegetation disturbance, conduct surveys for elderberry plants within 165 ft of the activity area and consult with USFWS if elderberry plants areas are found in order to determine if additional protective measures are necessary.

[50] Issued by FERC in October 1975.

- California Red-legged Frog
    - Implement Yuba Water's proposed Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan (GS3) filed on April 12, 2018 that includes measures for the collection, storage, and disposal of woody material from project reservoirs and prevents wood stockpiling and/or burning in California red-legged frog critical habitat.
    - Implement Yuba Water's proposed Integrated Vegetation Management Plan (TR1) that includes measures for controlling non-native plant species, protecting special-status species, and revegetating disturbed areas, with modifications to*:" ... (3) implement BMPs to protect foothill yellow-legged frog and California red-legged frog habitat when vegetation management activities occur within 300 feet of streams; (4) define protocols for any pesticide use that is deemed necessary within the project boundary and within 500 feet of known locations of foothill yellow-legged frog that avoid adverse effects on individuals and their habitats; (5) prohibit the use of pesticides within a 260-foot buffer around the mean high water mark of aquatic features; (6) avoid stockpiling and subsequent removal of any fuels, slash, or debris related to hazard tree removal within 1,000 feet of wetlands or aquatic features*."
    - Implement Yuba Water's proposed Recreation Facilities Plan (RFl), with modifications to: " ... (3) include footbridges over stream crossings and signs to make users aware of the sensitive nature of California red-legged frog habitat along the West Shoreline Trail; and (4) continue closure of Moran Road from October 15 to May 1 to protect the California red-legged frog from vehicle mortality."
    - Implement Yuba Water's proposed Aquatic Invasive Species Monitoring Plan (AR5) that includes measures for bullfrog suppression efforts in Moran Cove, which is located in California red-legged frog critical habitat. FERC included modifications to ensure procedures for decontaminating field equipment to prevent the spread of aquatic pests and disease, including chytrid, are applied to all activities where equipment is transported from one body of water to another.

Additional information about the ESA consultation process that has occurred between FERC and USFWS is provided in **Appendix 2D** of this DEIR.

2.4.1.10.2 NMFS

To date, FERC has not completed consultation with NMFS under Section 7 of the ESA for the YRDP. On September 18, 2020, FERC sent a letter to NMFS requesting initiation of formal consultation and submitted a BA that analyzed the potential effects of relicensing the Upper Drum Spaulding Hydroelectric Project, the Lower Drum Spaulding Hydroelectric Project, Deer Creek Hydroelectric Project, Yuba-Bear Hydroelectric Project, and the YRDP on California Central Valley (CCV) spring-run Chinook salmon, Central Valley (CV) steelhead, and the Southern DPS of North American green sturgeon, their designated critical habitat, and essential fish habitat

(EFH). FERC's 2020 BA did not include consideration of the Southern Resident Killer Whale (SRKW) DPS (see additional discussion below in Section 2.5.2.6).

NMFS responded to FERC on October 16, 2020 indicating that the materials submitted with FERC's consultation request did not adequately describe the proposed action with sufficient detail to assess the effects of the action on listed species and critical habitat consistent with the nature and scope of the proposed action and, thus, did not provide all information necessary to initiate formal consultation under the ESA. NMFS's letter stated that the YRDP and the YB/DS projects were identified as two of ten FERC-licensed projects in the CV that have the potential to affect salmon in the Bay-Delta. Consequently, NMFS contended that the action area described in FERC's BA excluded significant portions of the West Placer County Streams as well as the lower Feather River, lower Sacramento River, and the Sacramento-San Joaquin Delta where effects associated with all five relicensing projects may occur. NMFS also recognized that the SWRCB had not issued final CWA Section 401 WQCs for the Upper Drum-Spaulding (P-2310), Lower Drum (P-14530), and Deer Creek (P-14531) projects. Because the terms and conditions of the SWRCB's final WQCs are mandatory and will be incorporated into the final FERC licenses, NMFS (2020) stated that the WQCs must be included as a part of the proposed action. Without the SWRCB's final WQC terms and conditions, NMFS (2020) stated that there is significant uncertainty in the proposed action and the effects of the proposed action to listed species and critical habitat.

In a letter dated March 8, 2021, FERC requested from Yuba Water additional information to support FERC's preparation of a SEIS and a revised BA to complete FERC's ESA Section 7 consultation with NMFS for the YRDP. FERC is continuing to work on both the SEIS and revised BA, which presumably will address the potential effects of all five FERC relicensings in the upper Yuba River Watershed.

2.4.2 Proposed Narrows Project under New FERC License

In addition to the continued O&M of the existing Narrows Project facilities described in Section 2.3, the Narrows Relicensing Project includes:

1. Project-related changes proposed by Yuba Water;
2. Protective measures proposed by Yuba Water;
3. FERC-recommended modifications of Yuba Water's proposal and additional measures (if any); and
4. All mandatory terms and conditions (if any).

To date, no FERC-recommended modifications or additional measures to Yuba Water's proposal have been identified, and no FPA Section 4(e) Conditions have been recommended by the USFS or others.

This section describes: (1) the proposed Narrows Project facilities; (2) the proposed FERC Project Boundary for the Narrows Project; and (3) proposed Yuba Water changes to conditions in the existing FERC license for the Narrows Project. To date, no implementation plans have been proposed for the Narrows Project through the FERC relicensing process.

2.4.2.1 Proposed Narrows Project Facilities

Yuba Water does not propose any changes to existing Narrows Project works or facilities. Yuba Water proposes to continue to operate the Narrows Project in substantial conformance with existing operations, with minor modifications (see Section 2.4.2.3).

2.4.2.2 Proposed Narrows Project FERC Project Boundary

Yuba Water does not propose any changes to the existing FERC Project Boundary for the Narrows Project.

2.4.2.3 Proposed Yuba Water Changes to Conditions in the Narrows Project FERC License

As described in Section 2.3.2.6, the current FERC license for the Narrows Project includes 50 articles, of which Yuba Water considers Articles 14, 27, 28, 203, 401, 402, 404, 406, 407, 408, and 409 to be out-of-date. Yuba Water does not propose to include these, or articles similar to them, in the new license. Of the remaining articles in the current license, Articles 1 through 13, 15 through 26, 29 through 32, 201 through 204, are legal or administrative in nature. Yuba Water does not propose these but assumes that FERC would include them, or similar articles, if it chooses to do so in the Narrows Project's new license.

Articles 101 through 104 are USACE FPA Section 4(e) Conditions in the current license. Yuba Water does not propose them for the new license but expects FERC to include a standard article for existing projects at USACE dams requiring the licensee to enter into a Memorandum of Agreement with the USACE describing the detailed operation of the power facilities acceptable to the USACE.

For the Narrows Project, Yuba Water proposes to include, with some updates, the following four articles in the current license that replace Articles 402 and 411, 405, 403 and 410, respectively:

- Yuba Water's Narrows Project Proposed Condition 1, Supplemental Flows. This condition would continue the requirements of Article 402 and 411 where Yuba Water shall coordinate with the YRDP to develop a Water Release Plan to define how the two projects would coordinate operations and provide flows to the lower Yuba River. The Water Release Plan shall include a provision that releases from the Narrows Project Powerhouse up to 730 cfs, the maximum release capacity of the powerhouse, would be provided to assist YRDP meet the minimum flow requirements at USGS gage station 11418000, Yuba River Below Englebright Dam Near Smartsville, CA, as specified in the YRDP FERC license.
- Yuba Water's Narrows Project Proposed Condition 2, Ramping Rates. This condition would continue the requirements of Article 405 where Yuba Water's releases from the Narrows 1 Powerhouse shall not result in a rate of change in streamflow greater than flow fluctuation limits required at USGS gage station 11418000, *Yuba River Below Englebright Dam Near Smartsville, CA*, in the license for the YRDP. When Englebright Dam is spilling, no ramping rate shall apply to releases from the Narrows 1 Powerhouse.

- Yuba Water's Narrows Project Proposed Condition 3, Fish Stocking. This condition would continue the requirement of Article 403 where Yuba Water shall provide annually up to 5,000 rainbow trout (half pound each) to be stocked in Englebright Reservoir. The number of fish to be stocked and timing and location of fish stocking shall be coordinated with CDFW.
- Yuba Water's Narrows Project Proposed Condition 4, Consult with SHPO and Affiliated Native American Tribes. This condition would continue the requirement in Article 410 where Yuba Water, before starting any land clearing, land-disturbing, or spoil-producing activities in areas in which Yuba Water has not previously conducted a cultural resources survey and consulted with SHPO and affiliated Native American Tribes, shall consult with SHPO and affiliated Native American Tribes and conduct a cultural resources survey of the affected areas.

In addition to the above four existing measures that Yuba Water proposes be included in the new license, Yuba Water proposes to include the following three new measures:

- Yuba Water's Narrows Project Proposed Condition 5, Water Surface Elevation in Englebright Reservoir. Yuba Water's operation of the Narrows Project within its reasonable control shall not cause Englebright Reservoir's WSE to be lower than an elevation of 514.0 ft unless necessary for the temporary protection of life, health, property or environmental resources. If Yuba Water's normal operations or direction from the USACE result in an Englebright Reservoir's WSE lower than 514.0 ft, Yuba Water shall notify the Commission as soon as possible but no later than 10 days after the variance occurs. Yuba Water's notification shall include the reason for and expected duration of the temporary variance.

- Yuba Water's Narrows Project Proposed Condition 6, Nesting Peregrine Falcon Protection. To the greatest extent feasible, Yuba Water would schedule Narrows Project vegetation clearing, ground-disturbing and loud noise-generating activities outside of the nesting bird season of January 1 through August 15 to avoid take of nesting American peregrine falcons (*Falco peregrinus*). If these activities cannot be avoided during the nesting bird season, Yuba Water would conduct an occupancy survey for the American peregrine falcon nest site located adjacent to the Narrows Project in the cliff complex below Englebright Dam across from and approximately 575-600 ft south-southeast of the Narrows 2 Powerhouse. Surveys would be conducted as described in *Protocols for Observing Known and Potential Peregrine Falcon Eyries in the Pacific Northwest* (Pagel 1992).

  Yuba Water would perform an initial visit of at least four continuous hours to the survey area to determine occupancy. If no evidence of occupancy is found during the survey, work may proceed. A determination that a potential nest site is not occupied can only be made after at least two visits are completed consisting of observation periods of four hours or more during each visit. Yuba Water would conduct a second visit (i.e., 25 to 30 days after the first visit) to confirm whether the potential nest site is occupied. If the nest is occupied, work would be postponed until the end of the nesting season, or when the nest is confirmed as abandoned or successful (per 14-day fledged period concluded). Work may continue if additional nest surveys demonstrate that the young have fledged, and the 14-day post fledge period has concluded.

- Yuba Water's Narrows Project Proposed Condition 7, Bat Management. Yuba Water would, in the first full calendar year after license issuance, document bat roosts and openings large enough to admit bats within the Narrows 1 Powerhouse and tram building. If bats, signs of roosting, or openings are present where staff have a routine presence (i.e., at least daily or weekly), Yuba Water would, where feasible, place humane exclusion devices to prevent occupation of the structure by bats.[51] Humane exclusion devices would be placed when bats are absent from the facility, generally between November 1 and February 28. If overwintering bats are present during the inspection, installation of humane exclusion measures shall be delayed. Prior to installation of the humane exclusion devices, Yuba Water shall perform an inspection of the facility to ensure that overwintering bats would not be trapped. When a new exclusion device is installed, the device would be inspected 6 months later to confirm effectiveness (i.e., no evidence of bat presence). All exclusion devices would be inspected on a biannual basis, and the facilities would be reevaluated for roosting bats and openings every 5 years to check that no new roosts or entry points have been established.

Refer to Appendix E2 in Exhibit E of Yuba Water's (2023a) FLA[52] for the complete text and rationale for each of the conditions Yuba Water proposes to include in the new license for the Narrows Project (YCWA 2023a).

None of Yuba Water's proposed conditions, if included in the new license, would materially alter Narrows Project operations that are summarized above and fully described in Exhibit B of Yuba Water's (2023a) FLA.[53] Therefore, the plots and descriptions of Narrows Project operations under Yuba Water's proposed conditions are not repeated here. Under the new license, Yuba Water would continue to market the electrical energy output of the Narrows Project by scheduling the energy output of the Narrows Project into the CAISO and market the capacity products, including Resource Adequacy and Renewable Energy Credits.

Yuba Water does not propose any changes to its current facility maintenance activities described in Section 2.3.2.4. Yuba Water also has no plans to change the period (typically 3 weeks during June or July) when planned annual outages are taken for maintenance purposes but may do so as long as the outage is not in conflict with any license terms or applicable laws or regulations.

2.4.2.4 FERC Staff Alternative Modifications, Section 4(e) Conditions, and Form L-5 Terms and Conditions for Narrows Project

To date, FERC has not recommended conditions for any new license that may be issued for the Narrows Project. Additionally, no FPA Section 4(e) terms and conditions for the Narrows Project have been identified by the USACE or USFS, or provided to FERC. If FPA Section 4(e) Conditions are provided to FERC by USACE and/or USFS, such mandatory conditions would become part of the new FERC license for the Narrows Project. As noted in Section 2.4.0.7, FERC's Form L-5 standard Terms and Conditions, specified in Appendix 2C, would be expected to be applicable to the Narrows Project as well as the YRDP.

[51] Bats will not be excluded from roosts discovered on the exterior of Narrows Project facilities.
[52] https://www.yubawater.org/357/Narrows-Relicensing
[53] https://www.yubawater.org/357/Narrows-Relicensing

2.4.2.5 Recommended CWA Section 401 Certification Conditions for New Narrows Project FERC License

On December 30, 2024, Yuba Water filed an application for a WQC with the SWRCB in support of Yuba Water's application for a new FERC license for the Narrows Project. After filing the request, Yuba Water received a confirmation email from the SWRCB that the application was received. In anticipation of filing the WQC application, Yuba Water and the SWRCB participated in a pre-filing meeting on October 10, 2024 consistent with the regulatory requirements in 40 C.F.R. §121.4.

The WQC application package for the Narrows Project that Yuba Water submitted to the SWRCB included background information and recommended findings for the WQC (**Appendix 2G**), which are included as part of the Narrows Relicensing Project that is evaluated in this DEIR.

2.4.2.6 Narrows Project Endangered Species Act Section 7 Consultation

To support the development of Yuba Water's FLA for the Narrows Project, Yuba Water searched several informational sources (e.g., the California Native Plant Society's (CNPS) database, CDFW's California Natural Diversity Database (CNDDB), USFWS's and NMFS's online database and recovery plans) to identify ESA-listed species that may be present in the project vicinity that could be affected by the Narrows Project. Based on these searches, Yuba Water identified a total of eleven ESA-listed species. The Narrows Project was visited on May 1 and May 21, 2020, for a focused plant survey and habitat assessment. No ESA-listed species were observed during either visit. Based on the May 2020 surveys and assessment, Yuba Water determined that the relicensing proposal for the Narrows Project would have no effect on most of the identified ESA-listed species.

As a result, Yuba Water concluded that only three ESA-listed species have a potential to be affected by Yuba Water's relicensing proposal for the Narrows Project, including spring-run Chinook salmon, steelhead, and the Southern DPS of North American green sturgeon. For both the Narrows Project and the YRDP relicensings, Yuba Water determined that the SRKW DPS would not be affected, as discussed below (YCWA 2023a).

According to NMFS (2024), potential impacts on the SRKW DPS may occur as a result of changes in the availability of SRKW preferred prey (i.e., Chinook salmon) in coastal waters where SRKWs may encounter Chinook salmon from the CCV. NMFS (2024) recognizes that available data and analyses do not currently support an analytical approach that statistically quantifies the effects of changes in Chinook salmon abundance to SRKW survival and recovery (i.e., mortality and reproduction). In the absence of a predictive analytical tool to evaluate this relationship, NMFS (2024) uses a weight-of-evidence approach to consider all of the information available to assess impacts on SRKW. Applying a similar approach, the SRKW DPS was dismissed from consideration in this DEIR for the following reasons.

- Although Chinook salmon reportedly make up approximately 20% of the SRKW diet from February through April, the contribution varies by stock and proportion in each of those months. The vast majority of Chinook salmon in the CV are non-ESA listed fall-run Chinook salmon and, to a lesser degree, non-ESA-listed late fall-run Chinook salmon and ESA-listed populations of CV spring-run Chinook salmon (NMFS 2024).

- For long-term operation of the CVP and SWP, relative to current CVP/SWP operations, NMFS (2024) reports that the change in Chinook salmon abundance in the ocean is estimated to be relatively small (less than 1% median estimate).

- Although there is reportedly a declining trend in Chinook salmon productivity in the CV, which is of concern to the long-term outlook for available prey resources for SRKWs, the overall productivity of the system currently depends heavily on modified hatchery release practices to minimize impacts from long-term CVP/SWP operations and other factors in the CV (NMFS 2024).

- NMFS (2024) concluded that long-term operation of the CVP and SWP will add further, albeit slight, reductions in adult ESA-listed and non-ESA-listed Chinook salmon available as prey to SRKWs to the declining trend. However, NMFS (2024) concluded that long-term operation of the CVP and SWP is not likely to appreciably reduce the likelihood of both the survival and recovery of the SRKW DPS. NMFS (2024) also determined that the effects of long-term CVP/SWP operations would not appreciably diminish the value of the critical habitat for the conservation of SRKWs.

As supported by the analyses conducted in Chapter 9 (Fisheries Resources) of this DEIR, neither YRDP relicensing operations nor Narrows Project relicensing operations would result in significant (or potentially significant) impacts to any run of Chinook salmon. Consequently, because the Proposed Projects would not affect the SRKW prey base, this DEIR does not further consider potential impacts to SRKW or its critical habitat. As previously discussed, the Narrows Project is unique in that it operates in coordination with the YRDP to provide flows to the lower Yuba River. In particular, the Narrows Project directly supports the PM&Es that were proposed for the YRDP that are being analyzed through FERC's ESA consultation with NMFS. It is due to this unique coordination and co-location of the Narrows 1 and Narrows 2 powerhouses that the studies, as well as the ESA consultation performed in support of the ongoing YRDP relicensing, are directly applicable to the Narrows Project FERC relicensing. For these reasons, Yuba Water believes there would be significant advantages to aligning post-application relicensing activities (in particular, FERC's NEPA analysis and Section 7 ESA consultation) for the Narrows Project with the relicensing activities for the YRDP. Because FERC has not yet completed consultation with USFWS or NMFS under Section 7 of the ESA for the Narrows Project, it is unknown whether additional ESA-related regulatory requirements will be identified for implementation of the Narrows Project as part of a new FERC license.

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CHAPTER 3

ALTERNATIVES

This chapter provides a description of the alternatives considered in this DEIR, which are analyzed in each of the individual resource chapters (see Chapters 5-24) at a level that provides sufficient information about the environmental effects of each alternative for comparative purposes and to allow for informed decision-making. Chapter 25 provides a summary of the overall environmental impacts of the alternatives, compares how well the alternatives meet the YRDP and Narrows Project objectives, and identifies the environmentally superior alternative. Several other alternatives were considered, but because they were rejected from further consideration (see Section 3.6) they are not included in the comparison of alternatives.

3.1 Introduction

The California Code of Regulations (C.C.R.) Section 15126.6(a) (State CEQA Guidelines) requires EIRs to describe *"… a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a range of potentially feasible alternatives that will avoid or substantially lessen the significant adverse impacts of a project, and foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason*." This section of the State CEQA Guidelines also provides guidance regarding what the alternatives analysis should consider. Subsection (b) further states the purpose of the alternatives analysis is as follows:

> Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

The State CEQA Guidelines require that the EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Projects. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project as proposed (C.C.R. Section 15126.6[d]).

The State CEQA Guidelines further require that a "no project" alternative be considered (C.C.R. Section 15126.6[e]). The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving Proposed Projects with the impacts of not approving the Proposed Projects. If the no project alternative is the environmentally superior

alternative, CEQA requires that the EIR "…*shall also identify an environmentally superior alternative among the other alternatives*." (C.C.R. Section 15126.6[e][2]).

In defining "feasibility" (e.g., "… feasibly attain most of the basic objectives of the project …"), C.C.R. Section 15126.6(f) (1) states, in part:

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In determining what alternatives should be considered in the EIR, it is important to consider the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency's decision-making body—here, the Yuba Water Board of Directors (See PRC Sections 21081.5, 21081[a] [3]).

3.2 Alternatives Development Process

The range of alternatives considered and evaluated in this DEIR are the product of an extensive FERC relicensing process conducted for the YRDP (FERC 2019) that has included considerable public input and involvement. The FERC relicensing process for the YRDP has spanned over a decade and involved multiple studies and resource planning efforts. The planning efforts considered a wide variety of factors, including the feasibility of implementation and opportunities for reducing potentially significant environmental impacts while meeting the Proposed Projects' CEQA objectives. As described in Chapter 2, the Proposed Projects include a suite of PM&Es (including the 21 YRDP implementation plans) that were pro-actively developed and agreed upon by FERC, Yuba Water and other Relicensing Participants to address concerns about potential environmental impacts of the Proposed Projects that were raised during the FERC relicensing process. Therefore, the YRDP and Narrows Project relicensings are generally improving conditions, relative to the Existing Condition. Nevertheless, due to the nature of the Proposed Projects, the potential does exist for potentially significant impacts to occur. For this reason, as well as to provide additional information that has been requested to help inform the decision-making processes of FERC and the SWRCB, this DEIR identifies and evaluates several alternatives to the Proposed Projects.

3.2.1 Alternatives Overview

This DEIR evaluates three alternatives to the Proposed Projects:

- No Project Alternative
- Alternative 1 – Yuba Water's October 31, 2022 Offer of Settlement for the YRDP
- Alternative 2 – SWRCB Draft Bay-Delta Plan Update Regulatory Pathway Scenario

The analysis of the No Project Alternative addresses two potential No Project scenarios: (1) Yuba Water does not accept new licenses for either the YRDP or the Narrows Project; and (2) Yuba Water does not accept a new license for the Narrows Project. Additional information about the No Project Alternative is provided in Section 3.5 below.

Both Alternative 1 and Alternative 2 include operational changes for the YRDP specifically; however, because YRDP and Narrow Project operations are coordinated, the analysis of these alternatives also is relevant for both Proposed Projects.

3.3 Alternative 1 (Yuba Water's October 31, 2022 Offer of Settlement for the YRDP)

Yuba Water developed Alternative 1 as a proposal for the YRDP and upstream projects to equitably allocate water to provide cooler water temperatures in the lower Yuba River for federally listed species protection from July through November. Alternative 1 proposes to reoperate the release of 15,600 acre-ft of additional flow from the YB/DS projects[1] during Dry and Critically Dry years, but this reoperation would only be possible if water is made available by the YB/DS projects – which is subject to approval of a new license term by FERC.

On March 8, 2021, FERC sent Yuba Water an Additional Information Request (AIR) to inform FERC staff's analysis in a supplemental EIS and to prepare a revised biological assessment for Yuba Water's YRDP (FERC Project No. 2246) (FERC 2021). The AIR's Item 3 requested that Yuba Water evaluate options for the equitable allocation of water to provide cooler water temperatures in the lower Yuba River at times by consulting with the Pacific Gas & Electric Company (PG&E) (Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310) and Lower Drum Hydroelectric Project (FERC Project No. 14530)) and Nevada Irrigation District (NID) (Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and Deer Creek Hydroelectric Project (FERC Project No. 14531)) and developing an agreed-upon analysis of the amount of additional water from either storage or transfers necessary in Dry and/or Critically Dry years (or combination of dry type years) to maintain cooler water in the lower Yuba River for federally listed species protection from July through November. FERC also sent coordinated AIRs to NID and PG&E on March 8, 2021. Yuba Water developed its Offer of Settlement in response to FERC's AIR Item 3 within the context of FERC's coordinated request to Yuba Water, NID and PG&E.

To identify potential actions to address FERC's goal of providing cooler water temperatures from July to November in the lower Yuba River during Dry and Critically Dry years, a multi-step process was undertaken by Yuba Water (2022). One of these steps was an examination of the

[1] This DEIR uses the term "YB/DS projects" to refer to four other FERC relicensing projects located in the upper Yuba River Watershed, which include: (1) NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266); and (2) PG&E's Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310), Lower Drum Hydroelectric Project (FERC Project No. 14531) and Deer Creek Hydroelectric Project (FERC Project No. 14530).

magnitude and frequency of occurrence of water temperatures in the lower Yuba River over the July to November period. Based on evaluations of water temperature exceedance distributions for the Proposed YRDP Project (FERC Staff Alternative) with operations to the 4(e) flows for NID and PG&E's YB/DS projects, and Base Case scenarios for the 48-year period of simulation used in the AIR analysis, as well as separately for the 15 Dry and Critically Dry water years, the identification and development of actions to improve water temperatures in the lower Yuba River primarily focused on reducing water temperatures during the early portion of the spring-run Chinook salmon spawning and incubation period (i.e., September and October), and secondarily focused on the remaining portion of the July through November period.

Another of the steps undertaken in the process of identifying water temperature enhancement actions was examination of mechanisms driving water temperatures in the lower Yuba River. This step, in particular, led Yuba Water to identify non-flow actions that directly address identified mechanisms affecting water temperatures in the lower Yuba River. Consequently, both non-flow and flow actions were included in Yuba Water's proposed Offer of Settlement to FERC, which is presented in this DEIR as Alternative 1. These non-flow and flow actions are an integrated suite that, when collectively implemented, would achieve a water temperature regime that is protective of ESA-listed fish species.

On October 31, 2022, Yuba Water submitted a Technical Memorandum (TM) to FERC along with this proposed "Offer of Settlement." This TM, which provides additional information about this process and history and documents Yuba Water's previous determination that the proposal would equitably benefit ESA-listed fish and their critical habitat, is included in **Appendix 3A** of this DEIR.

Alternative 1 includes an integrated suite of measures to be implemented by Yuba Water, PG&E, and NID, in coordination with each other, for Yuba Water's YRDP, PG&E's Upper Drum-Spaulding Project, Lower Drum Project, and Deer Creek Project, and for NID's Yuba-Bear Project. Alternative 1 proposes to reoperate the release of 15,600 acre-ft of additional flow from the YB/DS projects during Dry and Critically Dry years, but this reoperation would only be possible if water is made available by the YB/DS projects – which is subject to approval of a new license term by FERC. Because Yuba Water cannot impose operational changes on PG&E's and NID's upstream projects, Alternative 1 is a conditional alternative that is subject to FERC's acceptance and implementation.

Alternative 1 would include all non-flow components of the Proposed Projects and all Narrows Project operations under the Proposed Projects. These are described in Section 2.5.1 (Proposed YRDP under New FERC License) and Section 2.5.2 (Proposed Narrows Project under New FERC License) of Chapter 2 and are not repeated here. Compared to the Proposed Projects, Alternative 1 includes modifications to YRDP operations and additional non-flow measures.

Specifically, Alternative 1 includes two non-flow components and two flow components, to be implemented as an integrated suite of actions by Yuba Water in coordination with PG&E and NID, consistent with proposed license conditions in new licenses issued by FERC. These are described below.

- **New Bullards Bar Dam (NBBD) Dual Intake (Yuba Water Proposed Measure AIR-1):** Yuba Water would use the upper intake at NBBD during the spring (March, April, and May) and NBBD's lower intake the remainder of the year. To implement this non-flow action (referred to as the NBBD Dual Intake), Alternative 1 would include the following proposed license condition for the YRDP:

  Beginning the first full calendar year of the new license term, Licensee shall open the upper intake for New Colgate Powerhouse and close the lower intake within the first five days of March. The upper intake will remain open during the months of March, April and May, and the upper intake will be closed and the lower intake will be opened at a time determined by Licensee during the last five days of May. The upper intake will remain closed until the following March. The schedule will be repeated each year unless the water surface elevation of New Bullards Bar Reservoir falls below elevation 1881.0 ft msl (648,800 acre-feet) between March and May, at which time the upper intake will not be used. In consultation with CDFW and NMFS, Licensee may propose to delay the starting date and implement an earlier ending date for utilization of the upper intake for improving water temperature conditions in the lower Yuba River. If supported by CDFW and NMFS, Licensee may adjust the period for use of the upper intake. The shutter system covering the upper intake at the face of New Bullards Bar Dam will not be used for this operation.

- **Englebright Variable Water Surface Elevation (WSE) (Yuba Water Proposed Measure AIR-2):** Yuba Water would manage flows into and out of USACE's Englebright Reservoir to increase the target water surface elevation from 519 ft msl to 525 ft msl from August 25 through September 10, maintaining the target elevation of 525 ft. msl through October 15, and implementing an October 16-31 ramp-down. To implement this non-flow action, Alternative 1 would include the following proposed license condition for the YRDP:

  Beginning the first full calendar year of the new license term, in Dry or Critically Dry year types as defined by the Smartsville Index, Licensee shall increase the targeted water surface elevation of Englebright Reservoir from the normal operating range of 516 to 523 ft. msl to a target elevation of 525 ft msl by gradually increasing the target range starting August 25 and achieving the target elevation of 525 ft. msl by September 10, maintaining a target elevation of 525 ft msl until October 15, and then ramping down from October 16 to October 31. For this condition, targeting an Englebright Reservoir elevation of 525 ft. msl means making a reasonable attempt to hold the water surface elevation above 523 ft msl, and not exceeding 526.5 ft msl. The target elevation will not apply any time that: (1) a California Independent System Operator Energy Emergency is in effect; (2) a similar emergency is declared by an entity with responsibility for management of northern California's electrical grid; or (3) an electrical or grid emergency proclamation of the Governor of California is in effect.

  During years that are not Dry or Critically Dry, but Licensee determines that mean daily water temperatures as measured at the Smartsville Gage (USGS

stream gage 11418000) may exceed 56 degrees Fahrenheit anytime during September or October, Licensee in consultation with CDFW and NMFS may use the target water surface elevation of 525 ft. msl described in this condition to improve water temperature conditions in the lower Yuba River.

- **Upstream Flow Contribution for Water Temperature Improvement for ESA-Listed Species in the Lower Yuba River (YB/DS Proposed Measure):** The YB/DS projects would collectively release an additional 15,600 acre-feet of water in Dry or Critically Dry years, for reregulation and release by Yuba Water into the lower Yuba River during September 1 through October 15. NID and PG&E would decide among themselves how to allocate responsibility for the additional 15,600 acre-feet. To implement this flow action, Alternative 1 would include the following proposed license condition for the YB/DS projects:

  For the purpose of improving water temperatures in the lower Yuba River for fish listed under the Endangered Species Act, Licensees of Projects Nos. P-2266, P-2310, P-14530 and P-14531 collectively shall release 15,600 acre-feet during Dry or Critically Dry water years (that are not extreme Critically Dry years) as defined by water year types of the Yuba-Bear and Drum-Spaulding Projects that is above the minimum streamflows of these projects' licenses. Licensees shall release that water at as even a rate as possible over about 30 days, but not extending past May 10, starting immediately after the California Department of Water Resources or a successor agency releases its April version of its Bulletin 120 (or a successor hydrologic forecast) that identifies the relevant year as a Dry or Critically Dry year. As expeditiously as possible during each Dry or Critically Dry Year, Licensees shall inform Yuba County Water Agency, the licensee for Project No. 2246, of the rate at which they will make their releases and the locations from which they will make their releases. Licensees of Projects Nos. P-2266, P-2310, P-14530 and P-14531 shall consult with one another as frequently as necessary to determine how to operate their respective projects to satisfy this license term and shall inform the Commission promptly of how they will allocate responsibility among themselves for meeting this term. The Licensees may determine their respective responsibilities under this license term on an annual or multi-year basis as they collectively deem appropriate.

- **175 cfs Flow Action (Yuba Water Proposed Measure AIR-3):** As noted above, the Yuba-Bear and Drum-Spaulding Projects would collectively provide 15,600 acre-ft of water during April and early May of Dry and Critically Dry years. Yuba Water would release this water to provide increased flows of 175 cfs to the lower Yuba River from September 1 through October 15 during those year types. To implement this flow action, Alternative 1 would include the following proposed license condition for the YRDP:

  Beginning the first full calendar year of the new license term, in Dry or Critically Dry year types that are not Extreme Critically Dry years as defined by water year types of the Yuba-Bear and Drum-Spaulding Projects, Licensee shall determine the additional volume of flow released during April 1 through

May 10 by the Yuba-Bear Project and the Drum Spaulding Project licensees for the purpose of lower Yuba River temperature reduction, not to exceed a total volume of 15,600 acre-feet that is above the minimum streamflows of those licensees. Licensee will operate Project No. 2246 so that, in order to improve water temperatures for listed fish, it releases an equivalent amount of water over the period of September 1 to October 15 as an increase in the minimum streamflow downstream of Narrows 2 Powerhouse as measured at the Smartsville Gage (USGS stream gage 11418000) and Marysville Gage (USGS stream gage 11421000).

Within 90 days of issuance of a new license, Licensee shall submit a plan defining how Licensee will calculate the amount of additional volume released by the upstream licensees for this condition.

As stated above, Alternative 1 is a conditional alternative that would require FERC's acceptance and implementation, including the license amendments proposed for the other FERC projects. All of the Yuba Water and non-Yuba Water components of Alternative 1 are included in this DEIR because each component is a necessary part of the integrated suite of proposed actions. At this time, Yuba Water cannot forecast whether or not FERC will accept the Offer of Settlement, or whether FERC would include the "YB/DS Proposed Measure" described as part of new licenses for the YB/DS projects. Moreover, Yuba Water cannot impose the operations described in the "YB/DS Proposed Measure" on any other party (i.e., the YB/DS projects).

For these reasons, this DEIR evaluates indirect impacts of Alternative 1 associated with the flow contributions from the YB/DS projects at a programmatic level, based on the information that is currently available to Yuba Water and reasonably foreseeable assumptions about how those non-Yuba Water operations would occur to meet Federal and California regulatory requirements. The YB/DS relicensings are also subject to their own CEQA review process. To the extent that YB/DS operations under new FERC licenses would have impacts that are outside the scope of those disclosed in this EIR or in the CEQA document(s) prepared by NID or PG&E for the new YB/DS FERC licenses, those impacts will need to be addressed through subsequent project-level CEQA review before NID and PG&E accept the new licenses. That CEQA review may incorporate information from this EIR and other relevant CEQA documents, as appropriate.

This DEIR fully evaluates the impacts of Alternative 1; however, at this time, Yuba Water cannot forecast whether FERC would approve Alternative 1 and include the above proposed conditions in new licenses for the YRDP and the YB/DS projects.

3.4 Alternative 2 - SWRCB Draft Bay-Delta Plan Update Regulatory Pathway Scenario

Yuba Water developed Alternative 2 in response to comments from the SWRCB on the NOP for this DEIR (see Appendix 1B).

For many years, the SWRCB has been considering potential amendments to the Water Quality Control Plan (WQCP) for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed. For example, in July 2018, the SWRCB staff released a "*Framework for the Sacramento/Delta Update to the Bay-Delta Plan*" (SWRCB 2018) which included, among other proposals, proposed water

quality objectives under which: (1) the minimum streamflows in all Sacramento River basin tributaries of the Delta would be required to be in an "adaptive range between 45% and 65% of unimpaired flow," with a default standard of 55% of unimpaired flow; and (2) those tributaries also would need to be managed to "*maintain stream flows and reservoir storage . . . to protect cold water habitat for sensitive fish species, including Chinook salmon, steelhead and sturgeon*."[2] In September 2023, the SWRCB released a draft staff report (DSR) as a draft substitute environmental document (SED) under CEQA to analyze the environmental and economic effects of, among other things, the implementation of the 2018 framework's proposed water quality objectives.[3,4] In keeping with these documents, in its December 2, 2024 comments on Yuba Water's NOP for this DEIR, the SWRCB requested representing implementation of the Draft Bay-Delta Plan Update "regulatory pathway" in the Yuba River Watershed.

On October 25, 2024, the SWRCB issued a draft of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed (Draft Bay-Delta Plan Update) consistent with its 2018 framework and 2023 DSR.[5] According to the SWRCB, the Draft Bay-Delta Plan Update "regulatory pathway" is ultimately intended to provide benefits to the Sacramento-San Joaquin Delta (Delta). The DSR (SWRCB 2023) asserted that, by providing higher flows to support a connected and functioning ecosystem and benefit native fish in the Sacramento Valley and the Delta, the Draft Bay-Delta Plan Update would be expected to improve conditions for native fish and wildlife in the Sacramento Valley and the Delta over time.[6]

Relative to the Proposed Projects, the SWRCB Draft Bay-Delta Plan Update involves an entirely separate process that affects the entire Central Valley of California and is not specific to the FERC relicensing of the YRDP or the Narrows Project, or the issuance of new FPA licenses by FERC. For that reason, Alternative 2, which evaluates Yuba Water's compliance with a possible future "regulatory pathway" Draft Bay-Delta Plan Update (as opposed to Yuba Water's attempts to accomplish the objectives for the Proposed Projects discussed in Chapter 2), is not the type of alternative to the Proposed Projects that CEQA would ordinarily require. However, because Yuba Water has been and remains involved in supporting the Draft Bay-Delta Plan Update process, this DEIR includes an analysis of Alternative 2 to provide insight into the potential impacts associated with a possible future "regulatory pathway" SWRCB Draft Bay-Delta Plan Update.

If the SWRCB adopts a "regulatory pathway" that involves a 55% unimpaired flow requirement for the Bay-Delta Plan Update, then it is anticipated that the SWRCB would seek implementation of the 55% unimpaired flow requirement through the WQCs that would be issued for the FERC relicensings that are occurring in the upper Yuba River Watershed. FERC has stated that it will be conducting the YRDP, Narrows, and YB/DS relicensings as a basin-wide proceeding. Therefore, if a 55% unimpaired flow requirement were part of the "regulatory pathway" adopted by the

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2 https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf

3 https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/staff_report.html

4 https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/2024/drft-sacdelta-bdplan-updates.pdf

5 https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/2024/drft-sacdelta-bdplan-updates.pdf

6 In January 2024, Yuba Water and many others submitted comments on the DSR that, among other things, documented that the unimpaired flow-based minimum streamflow standards proposed by the 2018 framework and discussed in the DSR would be unlikely to actually benefit many native fish species due to, among other impacts, their impacts on water temperatures.

SWRCB as part of the Bay-Delta Plan Update, it would be reasonable to expect that all of the FERC relicensing projects (i.e., YRDP, Narrows Project and the YB/DS projects) would be required to operate in accordance with the conditions of the new FERC licenses (including the 4(e) flow requirements) that would be in effect, and conduct operations necessary to comply with a 55% unimpaired flow requirement.

Moreover, because implementation of the SWRCB Draft Bay-Delta Plan Update would apply not only to Yuba Water, but also to many other entities throughout the Sacramento Valley (including those that manage the CVP and the SWP), it would be speculative to make operational assumptions about how the SWRCB Draft Bay-Delta Plan Update could be implemented throughout the system (e.g., Feather River, Sacramento River, Delta). Since 2019, only two approaches to modeling how the SWRCB Draft Bay-Delta Plan Update could be implemented have been undertaken by the state. More recently, many conditions have changed and the SWRCB Draft Bay-Delta Plan Update continues to evolve as a result of the SWRCB's ongoing process (SWRCB 2025). Thus, while this DEIR explores how changed YRDP operations as part of the SWRCB Draft Bay-Delta Plan Update would be expected to affect flows in the lower Yuba River, the analysis does not speculate about how the SWRCB Draft Bay-Delta Plan Update might be implemented at the statewide level.

For the above reasons, this DEIR's inclusion of Alternative 2 differs from the more typical CEQA approach of evaluating only those alternatives to a proposed project that could feasibly attain most of the basic project objectives while also avoiding or substantially lessening potentially significant project impacts. During the scoping process, Yuba Water determined that Alternative 2 would not meet either of these criteria. Nevertheless, this DEIR identifies and evaluates Alternative 2 for the sole purpose of providing additional information requested by the SWRCB.

Alternative 2 would include all non-flow components of the Proposed Projects. Similarly, Alternative 2 includes the same modeled operational assumptions as the Proposed Projects, including FERC's (2019) FEIS flow requirements in the North Yuba, Middle Yuba, and Yuba rivers that will become part of a new license for the YRDP and use of the variable-elevation intake for the New Colgate Powerhouse. These are described in Chapter 2 and are not repeated here. The YRDP and Narrows Project would be operated in a manner consistent with all applicable requirements of the current Bay-Delta water quality control plan (Bay-Delta WQCP) (CVRWQCB 2019).

Compared to the Proposed Projects, Alternative 2 includes modifications to YRDP and Narrows Project operations (as well as similar operational changes to the upstream YB/DS projects under new FERC licenses) to comply with the following additional regulatory requirements under the SWRCB Draft Bay-Delta Plan Update:

- A requirement to provide 55% of the unimpaired Middle Yuba River[7]
- A requirement to provide 55% of the unimpaired South Yuba River flow[8]

[7] The Draft Bay-Delta Plan Update does not specify where the compliance location is to be located on the Middle Yuba River or the South Yuba River except for a general note that states where available existing stream gage locations would be used. The Middle Yuba River does not have a stream gage near the confluence with the Yuba River, but for modeling purposes the confluence is used.

[8] The compliance location for the South Yuba River is assumed to be located at the USGS Jones Bar stream gage location.

- A requirement to provide 55% of the unimpaired Yuba River flow at its confluence with the Feather River
- A minimum end-of-September New Bullards Bar Reservoir storage of 600 TAF in Wet, Above Normal, and Below Normal years
- A minimum end-of-September New Bullards Bar Reservoir storage of 400 TAF in Dry and Critical years

Given the lack of operational specificity in the SWRCB Draft Bay-Delta Plan Update regulatory pathway, Alternative 2 includes a representative operational scenario that could be implemented in response to the SWRCB Draft Bay-Delta Plan Update. This scenario includes the following:

- NID operations to provide the greater of 55% of unimpaired Middle Yuba River flows above Our House Dam on a daily basis or the YB project's FERC 4(e) requirements.
- Yuba Water operations to provide 55% of unimpaired Middle Yuba River flow at its confluence with the North Yuba River. Yuba Water would bypass flows at Our House Dam, as needed, to ensure 55% of the total Middle Yuba River watershed unimpaired flow reaches its mouth on a 21-day rolling average.[9]
- NID and PG&E operations of the YB/DS projects to provide the greater of 55% of the unimpaired South Yuba River flow at Jones Bar on a daily basis or their respective FERC 4(e) requirements.
- Yuba Water operations to provide the greater of 55% of the total Yuba River unimpaired flows at the Marysville gage on a 21-day rolling average[10] or the FERC (2019) FEIS-evaluated flows that will be part of a new license for the YRDP, whichever is greater. Yuba Water would not induce spills at New Bullards Bar Dam to meet the 55% unimpaired flow requirement, but it would spill Englebright Dam, if necessary and within its capability. Agricultural surface water supplies would be curtailed, as necessary, to meet the 55% of the unimpaired flow at the Marysville Gage.

[9] The SWRCB Draft Bay-Delta Plan Update regulatory pathway default implementation includes a requirement "r*equiring a year-round minimum flow level of 55 percent of unimpaired flow on a minimum 7-day running average*" (SWRCB 2024, p. 51). Yuba Water has previously provided comments to the SWRCB in response to the Draft Bay-Delta Plan Update stating the requirement for a 7-day running average is not operationally achievable. The Draft Bay-Delta Plan Update also includes an adaptive implementation provision to "o*ptimize flows to benefit native fish and wildlife while also minimizing water supply impacts*" (SWRCB 2024, p. 54). For simulation of Alternative 2, a 21-day running average was selected as an adaptive implementation to simulate compliance while attempting to minimize flow fluctuations that could impact fish and to minimize short term, high flow requirements that would require limiting water supply deliveries due to limited release capacity at New Colgate Powerhouse.

[10] See previous footnote.

- Yuba Water would curtail agricultural surface water supply deliveries, as necessary, to meet the 600 TAF carryover storage requirement in New Bullards Bar Reservoir in Wet, Above Normal, and Below Normal years, as defined by the SWRCB's Decision 1641 Sacramento Valley Index (SVI).
- In SVI Dry and Critical years, Yuba Water would continue curtail agricultural surface water deliveries, as necessary, to meet its existing carryover storage requirement of 440 TAF in the first dry or critical year of a sequence, and 400 TAF in subsequent dry or critical years.

Because the only differences between the Proposed Projects and Alternative 2 are flow-related, the narrative characterization of Alternative 2 above focuses on the flow-related operational changes that would occur under Alternative 2. This characterization informs the hydrologic modeling scenarios used to quantitatively evaluate Alternative 2 in this DEIR. For additional information, see Chapter 4, Framework for the Environmental Analysis.

3.5 No Project Alternative

As described in Section 15126.6(e)(2) of the CEQA Guidelines, the No Project Alternative shall discuss the existing conditions at the time the NOP is published, or if no NOP is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.

Under the No Project Alternative, there are two variants of how potential future conditions could be characterized: (1) Yuba Water would not accept the new 50-year FERC licenses for the YRDP and the Narrows Project; or (2) Yuba Water would not accept the new FERC license for the Narrows Project, but would accept the new FERC license for the YRDP. Operations under the second potential scenario would be similar to Proposed Projects operations. Related to the first potential scenario, Yuba Water also would not be able to obtain one-year FERC licenses for either the YRDP or the Narrows Project under the No Project Alternative. Yuba Water would continue to operate the YRDP and Narrows Project facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities (i.e., no electricity generation facilities) and for flood management purposes. No new environmental PM&E measures would be implemented. Anticipated YRDP and Narrows Project operations under the No Project Alternative would be as follows.

Areas Upstream of Englebright Reservoir

Upstream of USACE's Englebright Reservoir, flow and water temperature conditions under the No Project Alternative generally would be similar to those that occur under the CEQA Baseline (Existing Condition) with the following exceptions:

- In the absence of power generation under the No Project Alternative, there would be no peaking operations at the YRDP's Colgate Powerhouse. Because YRDP operations under the No Project Alternative would not include Colgate Powerhouse peaking operations, this would result in reduced fluctuations of Yuba River inflows into Englebright Reservoir and Englebright Reservoir water surface elevations, relative to the CEQA Baseline (Existing Condition).
- The only difference in operations relative to the CEQA Baseline (Existing Condition) would be minor hourly and intraday variation releases from the Colgate Powerhouse into the Yuba River reach that flows into Englebright Reservoir. However, these small flow and water temperature changes would be equalized in Englebright Reservoir and would not result in changes downstream in the lower Yuba River.[11]
- Without peaking at the YRDP's Colgate Powerhouse, there would essentially be a constant flow of water into Englebright Reservoir, so the weekly fluctuations in reservoir storage (normally about 8 ft with peaking occurring) would not occur under the No Project Alternative.

Lower Yuba River

Downstream of USACE's Englebright Reservoir, flow and water temperature conditions in the lower Yuba River under the No Project Alternative would be the same as flows and water temperatures under the CEQA Baseline (Existing Condition). As described above, changes in flow and water temperature conditions upstream of USACE's Englebright Reservoir would not occur except for relatively minor intra-day variation in releases between New Colgate Powerhouse and Englebright Reservoir. Downstream of USACE's Englebright Dam, conditions in the lower Yuba River under the No Project Alternative would be identical to the CEQA Baseline (Existing Condition). For these reasons, the No Project Alternative is not quantitatively evaluated as a modeled comparative scenario in this DEIR. For certain resources, potential effects of the No Project Alternative compared to the CEQA Baseline (Existing Condition) are qualitatively discussed, as appropriate.

Other Considerations

Hydropower Generation

In the absence of a hydropower license from FERC under the No Project Alternative, the YRDP and the Narrows Project would discontinue hydropower generation operations. Thus, these projects would no longer be able to provide hydroelectric generation to meet part of California's power requirements, resource diversity, and capacity needs. Consequently, the non-operation of YRDP and the Narrows Project facilities for hydropower generation purposes, particularly the YRDP's New Colgate Powerhouse, would result in a reduction in available power supplied to the California grid, as well as a reduction in the operational flexibility of the grid by CAISO.

[11] The changes described above for the No Project Alternative are not reflected in the flow and water temperature modeling due to differences in the routing of water not being represented in the modeling outputs (e.g., essentially the same flows result in the lower Yuba River). However, the changes anticipated under the No Project Alternative are discussed qualitatively in Chapter 5 (Surface Water Resources).

The elimination of YRDP and Narrows Project energy generation capabilities[12] would also eliminate Yuba Water's ability to market power and obtain hydropower revenues that have historically been reinvested back into Yuba County to improve flood management, water supply reliability and overall economic conditions, as well as funding important community-based initiatives (e.g., Community Impact Grant and Loan Program, Watershed Resilience and Forest Health Projects), watershed education programs, recreational opportunities and environmental restoration projects in the lower Yuba River. Because Yuba Water would no longer benefit from the revenue generated from power sales, Yuba Water's water customers also would likely be affected. Furthermore, Yuba Water's debt that is being used to fund the FERC relicensing efforts is secured with hydropower revenue. If revenue could not be obtained from the Proposed Projects, this would also be expected to put a financial burden on Yuba Water's water customers.

Federal Power Act License Acceptance – Alternative Characterizations of the No Project Alternative

Although the description of the No Project Alternative provided above assumes that Yuba Water would not accept new FPA licenses issued by FERC for both the YRDP and the Narrows Project, the potential does exist for other circumstances in which Yuba Water may choose to accept a new FPA license for one FERC project but not for the other FERC project. The potential circumstances that could occur under the No Project Alternative with respect to Yuba Water's non-acceptance of the pending new FPA licenses to be issued by FERC are discussed below.

- **No Project Alternative (FPA Scenario A) – Yuba Water accepts the conditions associated with a new FPA license for the YRDP, but not for the Narrows Project.**

  Under this characterization of the No Project Alternative, Yuba Water could decide to accept the conditions associated with a new FPA license for the YRDP, but not for the Narrows Project. Under these circumstances, Yuba Water would be able to meet specified regulatory requirements regarding lower Yuba River instream flows and continue to achieve various components of the agency's mission to provide a source of hydroelectric power, flood risk reduction, and water supplies for both domestic and irrigation purposes, as well as providing benefits for recreation, fish and wildlife habitat.

  Under a No Project Alternative where Yuba Water decides to accept the conditions associated with a new FPA license for the YRDP, but not for the Narrows Project, the full release capacity of the Narrows Project tunnel and outlet works might still be used to coordinate with the YRDP, augment flows from the Narrows 2 Powerhouse and provide release capabilities to meet required downstream flows if the Narrows 2 Powerhouse and bypasses were not available, such as a tunnel outage. The release capacity at the Narrows Project might also be slightly lowered to only the bypass capacity of 530 cfs versus the full capacity of the Narrows Project of 730 cfs. There are a range of options for releases of water from the remaining facilities of the Narrows Project if Yuba Water decided not to accept a new license for the Narrows Project, but all the most likely options would be either no reduction, or relatively small reductions in release capacity and a change in release point. Any water that would have been released from the Narrows Project operations would

[12] Details regarding the potential environmental consequences resulting from the elimination of energy and revenue generation under the No Project Alternative are discussed in each of the individual resource chapters, as appropriate.

be released instead through Narrows 2 Powerhouse, or bypasses, or spilled at Englebright Dam. Flows to the lower Yuba River, release temperatures from Englebright Reservoir or storage levels in Englebright Reservoir would not materially change. The only major change would be a loss of qualifying small hydropower renewable power sold by Yuba Water as the Narrows Project is classified as a renewable energy small hydropower facility.

- **No Project Alternative (FPA Scenario B) – Yuba Water accepts the conditions associated with a new FPA license for the Narrows Project, but not for the YRDP.**

  Under this characterization of the No Project Alternative, Yuba Water could decide to accept the conditions associated with a new FPA license for the Narrows Project, but not for the YRDP. Under these circumstances, however, it would not be feasible for Yuba Water to continue to meet many of its core responsibilities associated with the agency's mission (see Section 1.2.1). Although operational coordination between the Narrows Project and the YRDP would continue, the resultant environmental consequences under this type of a scenario (i.e., a FPA license for the Narrows Project but not for the YRDP) would be the same as the conditions that would be anticipated if Yuba Water could not accept new 50-year FERC licenses for both the YRDP and the Narrows Project. For example, the hydropower revenues generated by the Narrows Project alone would not be sufficient to maintain the existing infrastructure of Yuba Water facilities, nor would they be sufficient to continue to support all of the other Yuba Water activities that have historically been supported by revenues from the YRDP, including benefits provided to recreation and for environmental purposes. Many other community-based activities (e.g., infrastructure expansion, education and workforce development, tourism and visitor services, community improvement grants, regional technology improvements, etc.) that Yuba Water actively supports would no longer be fiscally possible. Consequently, this version of a No Project Alternative scenario is not feasible because such a construct would make it impossible for Yuba Water to fulfill many of the core commitments described in its mission statement – primarily to provide sustainable management of water resources in support of the environment and quality of life for Yuba Water's communities.

3.6 Alternatives Considered but Eliminated from Detailed Analysis

One of the purposes of this DEIR is to identify and analyze a reasonable range of alternatives that could feasibly achieve most of the basic project objectives but avoid or substantially lessen any of the significant impacts of the Proposed Projects. Each of the alternatives considered below was eliminated from further consideration in this DEIR for the reasons described below.

3.6.1 YRDP Alternatives Considered but Eliminated by FERC

For NEPA compliance purposes, FERC considered the following two alternatives to Yuba Water's proposal in the 2019 FEIS but eliminated them from further analysis because FERC determined that they "*are not reasonable in the circumstances of this case*" (FERC 2019, p. 2-42).

- Issue a Non-Power License[13] - FERC (2019, p. 2-42 to 2-43) stated "*A non-power license is a temporary license that the Commission will terminate when it determines that another governmental agency [not Yuba Water] will assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this point, no agency has suggested a willingness or ability to do so. No party has sought a non-power license and we have no basis for concluding that the project should no longer be used to produce power. Thus, we do not consider issuing a non-power license a reasonable alternative to relicensing in this circumstance*."
- Retire the Project - FERC (2019, p. 2-43) stated that "*Project retirement could be accomplished with or without dam removal. Either alterative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions. No participant has suggested that dam removal would be appropriate in this case, and we have no basis for recommending it. The project dams are used for hydroelectric power generation and provide critical flood-control and water supply functions, as well as important environmental (coldwater pool) and recreation opportunities. Thus, dam removal is not a reasonable alternative to relicensing the project with appropriate protection, mitigation and enhancement measures. The second project retirement alternative would involve retaining the dam and disabling or removing equipment used to generate power. Project works would remain in place and would be used for historical flood-control, consumptive-use, environmental and recreational water management, or other purposes. This would require us to identify another government agency with authority to assume regulatory control and supervision of the remaining facilities. No agency has stepped forward, and no participant has advocated this alternative. Nor have we any basis for recommending it. Because the power supplied by the project is needed, replacement power from some other source, providing comparable ancillary benefits without adding air pollutants would have to be provided. In these circumstances, we do not consider removal of the electric generating equipment to be a reasonable alternative*."

In addition to the rationale provided in FERC (2019), which has been incorporated by reference here for disclosure purposes, alternatives involving the issuance of a non-power license and the retirement of the YRDP are not evaluated in this DEIR because Yuba Water has determined that such alternatives would not feasibly attain many of the basic project objectives identified for the YRDP, particularly those related to: (1) the ability to support California's power requirements and needs by providing renewable hydropower generation; (2) the ability to generate sufficient long-term, predictable revenue for Yuba Water's various projects and programs; (3) the continuing ability to meet regulatory flow requirements; and (4) the ability to obtain continued stability and predictability in long-term YRDP operations to provide water supply reliability support and to justify Yuba Water investments for modifications and improvements to its infrastructure. Although it would be speculative to make assumptions as to what specific actions (e.g., issue a non-power license to another government agency, remove electric generating equipment, etc.) FERC would or would not take under the scenarios described above, it is assumed that resultant impacts from such activities could be similar to those described for the No Project Alternative that is being

[13] A non-power license may be issued by FERC for purposes of transferring regulatory authority to a State, municipality, interstate agency, or another federal agency that is authorized and willing to assume regulatory supervision of the lands and facilities included under the non-power license (FERC 2004).

evaluated in this DEIR. Due to similarities between FERC's eliminated action alternatives and the No Project Alternative, considerations related to potential resultant activities that could occur in the absence of new FERC licenses for the YRDP and the Narrows Project relicensings are addressed in this DEIR as part of the analysis of the No Project Alternative.

3.6.2 Narrows Project Alternatives Considered but Eliminated by FERC

As described in FERC's (2024a; 2024b) scoping documents for the Narrows Project, FERC eliminated the following alternatives from detailed evaluation in its NEPA document for the reasons discussed below.

- Federal Government Takeover - FERC (2024a) stated that it does not consider federal takeover to be a reasonable alternative for the Narrows Project - "*In accordance with §16.14 of the Commission's regulations, a federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to Sections 14 and 15 of the FPA.*[14] *We do not consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project"* (FERC 2024a).[15]
- Issue a Non-Power License[16] - "*A non-power license is a temporary license the Commission would terminate whenever it determines that another governmental agency [not Yuba Water] is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no governmental agency has suggested a willingness or ability to take over the project. No party has sought a non-power license, and we have no basis for concluding that the Narrows Project should no longer be used to produce power. Thus, we do not consider a non-power license a reasonable alternative to relicensing the project*."
- Narrows Project Decommissioning - "*As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing in most cases.*[17] *Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs.*[18] *For these reasons, the Commission does not speculate about possible decommissioning measures at the time of relicensing, but rather waits until an applicant actually proposes to decommission a project, or a*

[14] 16 U.S.C. §§ 807-808.

[15] In addition, the federal takeover provisions in the FPA are inapplicable to projects owned by a state or municipality such as Yuba Water. See Pub. L. No. 278, 67 Stat. 587 (1953) and 16 U.S.C. § 828.

[16] A non-power license may be issued by FERC for purposes of transferring regulatory authority to a State, municipality, interstate agency, or another federal agency that is authorized and willing to assume regulatory supervision of the lands and facilities included under the non-power license (FERC 2004).

[17] *See, e.g.*, *Eagle Crest Energy Co.,* 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc.*, 111 FERC ¶ 61,327, at PP 35-38 (2005).

[18] In the unlikely event that FERC denies relicensing a project or a licensee decides to surrender an existing project, FERC must approve a surrender "*upon such conditions with respect to the disposition of such works as may be determined by the Commission.*" 18 C.F.R. § 6.2 (2023). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

participant in a relicensing proceeding demonstrates that there are serious resource concerns that cannot be addressed with appropriate license measures and that make decommissioning a reasonable alternative.[19] [Yuba Water] *does not propose decommissioning, nor does the record to date demonstrate there are serious resource concerns that cannot be mitigated if the project is relicensed; as such, there is no reason, at this time, to include decommissioning as a reasonable alternative to be evaluated and studied as part of* [FERC] *staff's NEPA analysis*."

In addition to the rationale provided by FERC (2024a; 2024b), alternatives involving federal government takeover, issuance of a non-power license to a non-Yuba entity, and decommissioning of the Narrows Project are not evaluated in this DEIR because Yuba Water has determined that such alternatives would not feasibly attain many of the basic project objectives identified for the Narrows Project, particularly those related to Yuba Water's ability to: (1) support California's power requirements and needs by providing renewable hydropower generation; (2) support long-term coordinated operations between the YRDP and the Narrows Project used to meet regulatory flow requirements; (3) generate sufficient long-term, predictable revenue for Yuba Water's various projects and programs; and (4) obtain stability and predictability in long-term coordinated operations between the YRDP and the Narrows Project to provide water supply reliability support and to justify Yuba Water investments for modifications and improvements to its infrastructure.

3.6.3 Alternatives Suggested During the CEQA Public Scoping Process

3.6.3.1 SWRCB 2020 Water Quality Certification for the YRDP

As discussed in Chapter 1, since the SWRCB issued its WQC for the YRDP in 2020, there have been several legal, regulatory and technical changes that have occurred, which relate to both the YRDP and the Narrows Project. On September 18, 2024, the SWRCB adopted State Water Board Order WQ 2024-0083 and set aside the 2020 WQC certification for the relicensing of the YRDP. State Water Board Order WQ 2024-0083 also dismissed the pending petitions for reconsideration of this certification.

During December 2024, Yuba Water filed new WQC applications for the YRDP and the Narrows Project with the SWRCB. As described in Chapter 2, proposed recommended WQC conditions for the YRDP[20] and separate proposed recommended WQC conditions for the Narrows Project[21] are included as part of the Proposed Projects evaluated in this DEIR.

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[19] *See generally Project Decommissioning at Relicensing; Policy Statement*, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); *see also City of Tacoma, Washington*, 110 FERC ¶ 61,140 (2005) (finding that unless and until FERC has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

[20] The proposed WQC Conditions presented in Appendix 2E were collaboratively developed by Yuba Water in coordination with CDFW and NMFS as recommended Section 401 WQC Conditions, with the exception of the modification provisions in proposed WQC Conditions 1(D), 12 and 24. NMFS and DFW do not take a position on these modification provisions because they believe they should be developed by the State Water Board and YWA. Other than the proposed modification provisions, the initial basis of the proposed WQC conditions was derived from the conditions that the SWRCB developed for the July 2020 WQC.

[21] Similar to the proposed WQC conditions developed for the YRDP Relicensing Project, Yuba Water has proposed WQC conditions for the Narrows Project Relicensing. The proposed WQC conditions are generally consistent with the proposed conditions presented in Exhibit 2A of the FLA and are commensurate with the scope of the Narrows Project.

3.6.3.1.1 Characterization of Alternative Considered

Condition 1 of the SWRCB's 2020 WQC contained recommendations for modifications of the minimum flow requirements described in FERC's (2019) FEIS for relicensing of Yuba Water's YRDP. The 2020 WQC's Condition 1(D) would have authorized the SWRCB's Deputy Director for Water Rights to order Yuba Water to comply with whatever new lower Yuba River streamflow standards he or she chose to adopt. The 2020 WQC also contained other terms[22] under which the Deputy Director could modify the YRDP's streamflow requirements to implement future Bay-Delta water quality control plan amendments and for other reasons.

3.6.3.1.2 Rationale for Elimination

At the time that the 2020 WQC was issued, Yuba Water had not yet initiated the CEQA process or conducted an evaluation of the FERC-relicensing changes being proposed for the YRDP in compliance with CEQA requirements. Although the SWRCB is a responsible agency under CEQA, no analysis was conducted by the SWRCB to demonstrate that the 2020 WQC requirements were in compliance with CEQA prior to issuance of the 2020 WQC. Since 2020, Yuba Water is not aware of any CEQA compliance documentation prepared by the SWRCB that demonstrates that the requirements that would be imposed by the 2020 WQC would be beneficial and would not result in adverse significant impacts to environmental resources under CEQA.

Previous analyses[23,24] of the 2020 WQC conducted by Yuba Water for purposes other than CEQA have demonstrated that the new streamflow requirements identified in the 2020 WQC: (1) could significantly reduce Yuba Water's hydroelectric generation and agricultural water supplies, including supplies that are used in areas that were in a state of significant overdraft before Yuba Water's water deliveries began; and (2) adversely affect Yuba Water's implementation of measures to benefit lower Yuba River salmon and steelhead by compelling Yuba Water to operate its facilities in a manner that would, among other things, significantly reduce reservoir storage and consequently increase the river's water temperatures at sensitive times for those fish species. In consideration of Yuba Water's previous analytical results and conclusions; the fact that potential impacts associated with the 2020 WQC have not been evaluated for CEQA compliance purposes; the fact that the Fresno County Superior Court has invalidated the 2020 WQC and the SWRCB set it aside in Order WQ 2024-0083; and the fact Yuba Water and the SWRCB are now consulting on a new WQC, a detailed analysis of the 2020 WQC in this DEIR would not appropriately reflect the potential conditions under which FERC might relicense the YRDP and potentially could be misleading. In addition, in Alternative 2 and at the SWRCB's request, this DEIR analyzes a potential relicensing scenario in which the YRDP and the Narrows project would be required to comply with minimum streamflow requirements based on 55% of unimpaired flows, consistent with documents the SWRCB has produced in the Bay-Delta water quality planning process.

As discussed in Chapter 1, since the SWRCB issued its WQC for the YRDP in 2020, there have been several legal, regulatory and technical changes that have occurred, which relate to both the YRDP and the Narrows Project. On September 18, 2024, the SWRCB adopted State Water Board Order WQ 2024-0083 and set aside the 2020 WQC certification for the relicensing of the YRDP.

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22 See SWRCB (2020), pp. 56-57 (Conditions 26, 28, 30-32).

23 https://www.yubawater.org/DocumentCenter/View/4658/Petition-for-Reconsideration-searchable?bidId=

24 https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/yubariver_ferc2246.html

State Water Board Order WQ 2024-0083 also dismissed the pending petitions for reconsideration of this certification.

During December 2024, Yuba Water filed new WQC applications for the YRDP and the Narrows Project with the SWRCB. As described in Chapter 2, proposed recommended WQC conditions for the YRDP[25] and separate proposed recommended WQC conditions for the Narrows Project[26] are included as part of the Proposed Projects evaluated in this DEIR.

3.6.3.2 CDFW-FWS-FWN Floodplain and FPA Section 10(j) Flow Recommendations Alternative

During the public scoping process for this DEIR, it was suggested that Yuba Water should consider an alternative that analyzes the CDFW-FWS-FWN floodplain and FPA Section 10(j) flow recommendations that were submitted to FERC.

3.6.3.2.1 Characterization of Alternative Considered

As described in FERC (2018), under the CDFW and USFWS recommended FPA Section 10(j) flow regime, minimum flows in the lower Yuba River would be the same as those proposed by Yuba Water except during the spring (March 23 to May 31), when they would be substantially higher than Yuba Water's during schedule 1 and 2 water years (and slightly higher during schedule 3, 5, 6, and conference years). Flows would also be significantly higher for February 1 to 6 of schedule 5, 6, and conference years, if higher flows had not already occurred during the previous December 1 through February 1 period. CDFW and USFWS suggest that the increased 10(j) flows were intended to mimic the natural hydrograph more closely in the lower Yuba River to promote floodplain inundation, the transport, storage, deposition, and recruitment of substrates and organic matter (such as woody materials), and the development, recruitment, and persistence of riparian vegetation. They are also designed to facilitate salmon and steelhead reproduction and outmigration, increase the amount of important off-channel rearing habitat, and enhance riparian seedling recruitment (FERC 2018).

CDFW, USFWS and FWN also asserted that YRDP operations impaired floodplain inundation and the establishment of riparian vegetation in the lower Yuba River. They suggested riparian restoration actions (e.g., floodplain lowering) to achieve greater floodplain inundation that would increase the extent of riparian vegetation on the lower Yuba River, providing for increased wetland habitat to benefit waterfowl, amphibians, and other terrestrial wildlife (FERC 2018).

[25] The proposed WQC Conditions presented in Appendix 2E were collaboratively developed by Yuba Water in coordination with CDFW and NMFS as recommended Section 401 WQC Conditions, with the exception of the modification provisions in proposed WQC Conditions 1(D), 12 and 24. *NMFS and DFW do not take a position on these modification provisions because they believe they should be developed by the State Water Board and YWA.* Other than the proposed modification provisions, the initial basis of the proposed WQC conditions was derived from the conditions that the SWRCB developed for the July 2020 WQC.

[26] Similar to the proposed WQC conditions developed for the YRDP Relicensing Project, Yuba Water has proposed WQC conditions for the Narrows Relicensing Project. The proposed WQC conditions are generally consistent with the proposed conditions presented in Exhibit 2A of the FLA and are commensurate with the scope of the Narrows Project.

3.6.3.2.2 Rationale for Elimination

Issues related to YRDP operations and potential effects on lower Yuba River instream flows, floodplain inundation, and fisheries resources have been extensively studied for over 30 years. Two of the most intensive and substantial environmental study processes were the Yuba Accord and the YRDP FERC relicensing process.

- **Lower Yuba River Accord**[27] - From 2002 through 2005, Yuba Water, CDFW, NMFS, USFWS, and several NGOs negotiated a set of minimum flow requirements (flow schedules) for the lower Yuba River downstream of Englebright Dam. These parties carefully considered the water supplies that would be available in different types of water years, ranked the stressors in the lower Yuba River that apply to each species or run of salmonids, and considered all relevant biological factors as they developed these flow schedules. From 2005 through 2007, Yuba Water conducted a comprehensive CEQA/NEPA process that analyzed the environmental effects of the Yuba Accord. In 2008, the SWRCB adopted its Corrected Order WR 2008-0014, which amended Yuba Water's water right permits to incorporate the Yuba Accord flow schedules. In 2024, Yuba Water approved a supplemental EIR to extend the Yuba Accord Long-term Water Transfer Program. As a component of the Yuba Accord, Yuba Water established the River Management Team (RMT), which evaluated the effects of implementing the Yuba Accord on anadromous fish in the lower Yuba River. The RMT collected field data to develop an instream flow model from June 2006 through June 2010, and a hydraulic model was developed from October 2010 through June 2012 (FERC 2018). Much of the work conducted by the RMT was used to directly inform the YRDP FERC relicensing process.
- **YRDP FERC Relicensing Process**[28] – Initiated in 2010, the relicensing process undertook an extensive effort to conduct numerous studies (e.g., hydrology, channel morphology, water operations, water quality, instream flows and fisheries resources, riparian habitat, ESA-listed species, among others) to investigate the potential effects of YRDP operations on instream flows, floodplain inundation, riparian habitat and fisheries resources, among other issues. Issues pertaining to the CDFW-FWS-FWN floodplain and flow recommendations were extensively examined at several points during the relicensing process, including:
    - YRDP Study Plan Development and Implementation[29]
    - FERC's Study Plan Dispute Resolution Process for the YRDP[30]
    - Preparation of Yuba Water's 2017 AFLA for the YRDP[31]

[27] https://www.yubawater.org/157/Lower-Yuba-River-Accord
[28] https://www.yubawater.org/217/Yuba-River-Development-Project-Relicensi
[29] https://www.yubawater.org/DocumentCenter/Index/31
[30] Available in FERC's Fy at Accession No. 20111228-3031 (Filed on December 28, 2011)
[31] Available in FERC's eLibrary at Accession No. 20170605-5050 (Filed on June 2, 2017)

- FERC's Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis (REA), and Soliciting Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions [32]
- Yuba Water's Petition for Reconsideration of the SWRCB's 2020 WQC for the YRDP[33]

- The data collected and analyses conducted for the activities listed above are in the FERC record for the project and were used to inform and support FERC's Draft EIS (2018) and Final EIS (2019), as well as this DEIR.

During FERC's REA process, CDFW, FWS and FWN made a number of non-flow recommendations for the lower Yuba River. The most significant and far-reaching of these was the recommendation to develop a plan for extensive physical habitat modifications[34] in the lower Yuba River, including lowering of floodplain surfaces, planting of riparian vegetation, and installation of LWM. However, as described in various sources of relicensing documentation (e.g., YCWA 2017a; 2017b), Yuba Water's YRDP is not responsible for the geomorphic and riparian conditions of the lower Yuba River, which have been severely degraded as a result of hydraulic mining during the Gold Rush era, dam building by the federal government for sediment control, and flood control channelization. Because the recommended habitat improvement measures cannot change the fundamental reshaping of the geomorphic and riparian conditions in lower Yuba River that occurred as a result of these historical influences, any improvements would be transitory at best (YCWA 2017b). Moreover, the costs of the habitat modifications proposed by the CDFW-FWS-FWN recommendations were estimated to be approximately $300,000,000 (in 2017 dollars) over 30 years.

Yuba Water modeled and analyzed the environmental, recreation, and cost impacts of resource agency and other stakeholder recommendations, including the CDFW-FWS-FWN proposed flow recommendations. Yuba Water provided the results of its modeling, analyses and technical reports to FERC, and made them available to the Relicensing Participants, CDFW,USFWS and other stakeholders.[35,36,37] On the lower Yuba River, Yuba Water (2017a) demonstrated that the CDFW-FWS-FWN proposal would upset the careful balance of the Yuba Accord flow schedules by recommending spring floodplain inundation flows, as well as spring and winter pulse flows. In

[32] Available in FERC's eLibrary at Accession No. 20170626-3039 (Filed on June 26, 2017)
[33] https://www.yubawater.org/DocumentCenter/View/4658/Petition-for-Reconsideration-searchable?bidId=
[34] The FPA Section 10(j) recommendations proposed by CDFW, FWS and FWN involved extensive removal of floodplain sediments to lower 340 acres of floodplain currently inundated at 5,000 cfs to be accessible to flows between 1,500 and 3,000 cfs. As part of the CDFW-FWS-FWN recommendations, Yuba Water also would have been required to vegetate (with native riparian plants) these acres and an additional 251 acres of floodplain currently inundated at flows between 3,000 and 21,000 cfs. Although CDFW, FWS and FWN did not conduct any assessment of potential environmental impacts, Yuba Water's (2017b) technical analysis found that an increase of 340 acres in terraced areas wetted between 1,500 and 3,000 cfs would result in an increase of over 40% in bankfull wetted area; thus over 40% of the entire area most proximate to the flowing river would be potentially impacted by wholesale grading operations. Yuba Water (2017a) estimated that if 680 acres would need to be disturbed in order to construct these terraces, then a total of 40% of the entire floodplain area of the length of the lower Yuba River would need to be disturbed in order to implement this recommendation. For terraforming of 340 acres of river channel, feathering the lowered areas into the remaining banks, and constructing haul and spoil areas, a simplistic estimate of grading volume would total about 4,000,000 yds^3 of coarse sediment (YCWA 2017b).
[35] Available in FERC's eLibrary at Accession No. 20171010-5266 (Filed on October 9, 2017)
[36] Available in FERC's eLibrary at Accession No. 20171012-4005 (Filed on October 12, 2017)
[37] Available in FERC's eLibrary at Accession No. 20171013-0006 (Filed on October 12, 2017)

their proposal, CDFW, FWS and FWN provided no evidence that additional flows are needed or would provide any significant benefits. In addition, Yuba Water's (2017a) modeling and analysis demonstrated that these flow recommendations would not provide significant benefits and would result in a substantial cost in lost power and water supply.

The CDFW-FWS-FWN proposal also included restrictions on project ramping and flow fluctuations downstream of Englebright Dam for protection of riparian seedlings. Yuba Water's analysis showed that the additional operational restrictions would not provide significant benefits and would result in less suitable water temperatures for numerous life stages of federal ESA-listed anadromous salmonids and would jeopardize the YRDP's ability to provide stable flows for spring-run Chinook salmon spawning. In addition, the restrictions would seriously impair the YRDP's flexibility in providing water supply when needed (YCWA 2017b).

Based on Yuba Water's (2017a) analysis, the CDFW-FWS-FWN proposal has a variety of flaws ranging from failure to support their recommendations with evidence of nexus to a YRDP project effect, failure to provide evidence of a problem that needs to be mitigated, failure to provide evidence that their recommendations will result in significant environmental benefits, failure to recognize that in many cases the recommendations would have redirected adverse environmental impacts, and failure to show that the environmental benefits, if any, outweigh the substantial costs that Yuba Water would incur to implement them as well as the loss of water supply to the water users who Yuba Water serves.

Based on FERC's analysis of the documentation submitted by various Relicensing Participants as part of the REA process and its analysis conducted for the 2019 FEIS, FERC determined that the floodplain and 10(j) flow recommendations proposed by CDFW-FWS-FWN did not have merit and should not be adopted.

Based upon: (1) the extensive amount of historical literature and previously conducted analyses on lower Yuba River instream flows, floodplain inundation, and fisheries resources that are available in the record; and (2) the fact that no nexus has been established between YRDP operations and adverse effects to floodplain inundation and fisheries resources in the lower Yuba River, a detailed analysis of the CDFW-FWS-FWN floodplain and flow recommendations as a distinct CEQA alternative in this DEIR is not warranted.

Moreover, the analyses conducted to date demonstrate that a "CDFW-FWS-FWN floodplain and flow recommendations alternative" would not feasibly attain most of the basic project objectives identified for the Proposed Projects, including those related to Yuba Water's ability to implement protections for lower Yuba River fisheries resources in a way that: (1) improves or provides additional protections for ESA-listed fish species and their designated critical habitat in the lower Yuba River; and also (2) fairly allocates protective activities such that no entity is disproportionately burdened with a responsibility to mitigate watershed impacts caused by other entities. A "CDFW-FWS-FWN floodplain and flow recommendations alternative" also would not meet other project objectives including the ability to: (1) support California's power requirements and needs by providing renewable hydropower generation; (2) continue to provide the existing level of water supply reliability support throughout the state consistent with the Lower Yuba River Accord Water Purchase Agreement; (3) generate sufficient long-term, predictable revenue for Yuba Water's various projects and programs; and (4) obtain stability and predictability in long-

term YRDP and Narrows Project coordinated operations to justify Yuba Water investments for modifications and improvements to its infrastructure. In addition, an alternative comprised of the CDFW-FWS-FWN floodplain and FPA Section 10(j) flow recommendations would not avoid or substantially reduce potentially significant impacts of the Proposed Projects. Accordingly, this alternative was eliminated from further consideration not only because it would not meet most of the project objectives but also because it would not eliminate or reduce the Proposed Projects' significant impacts.

3.6.3.3 Reduced Water Transfer Exports Alternative

During the public scoping process for this DEIR, it was suggested that Yuba Water should consider a "Reduced Water Transfer Exports Alternative" that analyzes reduced water transfers under Yuba Water's water transfer program.

In 2024, Yuba Water prepared a Supplemental EIR (SEIR),[38] a supplement to the 2007 Yuba Accord EIR, to evaluate the Extension of the Yuba Accord Long-Term Water Transfer Program (Accord Extension) - which was a separate project independent of the Proposed Projects being evaluated in this DEIR. The Accord Extension Final SEIR was certified by Yuba Water in September 2024. During the public comment period on the Accord Extension Draft SEIR, a "Reduced Water Transfer Exports Alternative" was suggested as an alternative to the Proposed Accord Extension. The summary rationale explaining why a "Reduced Water Transfer Exports Alternative" is not evaluated in this DEIR was taken from Yuba Water's Final SEIR (2024a, pp. 2-79 to 2-81) response to Comment O1-7, which is incorporated by reference. Yuba Water's Final SEIR (2024a) is available at https://www.yubawater.org/157/Lower-Yuba-River-Accord.

3.6.3.3.1 Characterization of Alternative Considered

Commentors suggested that a "Reduced Water Transfer Exports Alternative" would reduce out of basin water exports in anticipation of climate change impacts and the SWRCB's adoption of the Bay-Delta Plan Update. The comment stated that a reduced transfers alternative is reasonably foreseeable because Yuba Water may have less water available for transfer in the future due to proposed updates to the Bay-Delta Plan. The comment further indicates that a reduced transfers alternative would result in fewer impacts, relative to Yuba Water's extension of the Yuba Accord Long-Term Water Transfer Program (Accord Extension) that was evaluated in a separate SEIR (YCWA 2024a; 2024b).

3.6.3.3.2 Rationale for Elimination

The discussion provided below was taken from Yuba Water's Accord Extension SEIR (YCWA 2024a; 2024b) and appropriately explains why a "Reduced Water Transfer Exports Alternative" was not carried forward in that SEIR, as well as why it is not carried forward for detailed evaluation in this DEIR.

Yuba Water's (2024b) Draft SEIR for the Accord Extension was not required to consider alternatives to the project proposed in that SEIR, including a commenter's proposed "Reduced

[38] California State Clearinghouse Number 2005062111 (https://ceqanet.opr.ca.gov/Project/2005062111).

Transfers" alternative, because there would be no significant impacts to avoid or lessen through implementation of alternatives. Additionally, CEQA does not require that a lead agency identify and analyze alternatives based on hypothetical future conditions. As explained in the Draft SEIR (YCWA 2024a):

> Future changes to the watershed may occur due to the Voluntary Agreements, the future adoption of an updated Bay-Delta Water Quality Control Plan (Bay-Delta Plan), the outcome of the Biological Opinions (BOs) for the Long-Term Operations of the CVP and SWP, and the anticipated terms of a FERC license renewal and associated Water Quality Control Plan conditions. ***Each of these long-term processes are currently incomplete, with timelines for resolution that are wholly uncertain, and likely years away. Each process is related to some extent to the Yuba Accord, but at this point have only hypothetical outcomes that could resolve in myriad unknown ways.*** Therefore, incorporating these processes into the baseline would require speculation… ***Emphasis added.***

Regardless, substantial evidence demonstrated that a "Reduced Transfers" alternative would neither achieve the Accord Extension's project objectives nor be the environmentally superior alternative (YCWA 2024a). As Yuba Water previously demonstrated in its technical comments on the SWRCB's (2023) Draft Staff Report (DSR), the potential unimpaired flow-based requirements cited by the Accord Extension commenter would result in highly adverse impacts to the lower Yuba River's sensitive fish due to changes in water temperatures.

Although the comment on the Accord Extension suggested, without evidence, that it would be feasible for Yuba Water to implement a "Reduced Transfers" alternative in the event that SWRCB adopts unimpaired flow-based requirements, substantial evidence suggests otherwise. In January 2024, Yuba Water submitted extensive comments on the 2023 DSR to the SWRCB. As Yuba Water explained on pages 53 to 56 of those comments and in Technical Memorandum #2 that Yuba Water submitted with those comments, the SWRCB's imposition of unimpaired flow-based requirements on Yuba Water as proposed in the 2023 DSR likely would terminate all Yuba Accord transfers.[39] Yuba Water's comments and Technical Memorandum #2 provide an expert hydrological review of the SACWAM hydrologic modeling on which the DSR is based and concludes that operation of Yuba Water's YRDP, according to the DSR's SACWAM modeling, would eliminate Yuba Accord water transfers, and thereby eliminate a significant source of statewide water supply in droughts.

Because substantial evidence demonstrates that the new unimpaired flow-based requirements described in the 2023 DSR likely would terminate all Yuba Accord water transfers, the comment's premise that its proposed "Reduced Transfers alternative could achieve the project objectives" of the Accord Extension SEIR was incorrect. That premise was not supported by any information or data submitted with the comment or otherwise available. Yuba Water's comments on the 2023 DSR demonstrate that exactly the opposite would likely be the case. Specifically, the SWRCB's implementation of unimpaired flow-based requirements as discussed in the 2023 DSR likely would preclude *any* of the Accord Extension's project objectives from being met (YCWA 2024a).

[39] Yuba Water included its comments on the DSR, and Technical Memorandum #2 that it submitted with those comments, in the administrative record for the Accord Extension SEIR (YCWA 2024b). Those comments are publicly available from the SWRCB via a request sent to SacDeltaComments@waterboards.ca.gov (SWRCB 2024).

Likewise, because several of the objectives identified for the Proposed Projects in this DEIR are similar to those of the Accord Extension, Yuba Water's comments on the 2023 DSR also support the fact that a "Reduced Transfers" alternative would not align with the FERC relicensing process being considered in this DEIR.

Moreover, to the extent that a "Reduced Transfers" alternative might be implemented outside of a situation in which the SWRCB had adopted unimpaired flow-based requirements as discussed in the 2023 DSR, the comment appears to assume that other water users, including the U.S. Bureau of Reclamation (Reclamation) and DWR as the operators of the CVP and the SWP, respectively, would desist from exercising their own water rights with points of diversion downstream of the Yuba River to divert water that would be transferred under the Accord Extension. There is no basis for such an assumption. Nothing in the Accord Extension would involve the SWRCB acting to prevent the CVP and the SWP from exercising their own water rights to divert water Yuba Water would otherwise releases as part of the continuing elements of the Yuba Accord, but would be precluded from transferring in a "Reduced Transfers" alternative. The only water-right petition involved in the Accord Extension involves Yuba Water's water rights (See YCWA 2024b, p. 2-7.) Contrary to the assumption that a "Reduced Transfers" alternative would involve "*some of the water that is transferred under current operations would instead become Delta outflow*," the CVP and the SWP likely would simply divert that water, only without compensating Yuba Water.

In this scenario, the effect of a "Reduced Transfers" alternative would be to limit only Yuba Water's ability to transfer Yuba River water released under the Yuba Accord and would not be to limit other water users' ability to divert that water under their downstream water rights. Any such water therefore likely would be diverted by one or more of the many downstream water-right holders (who would not compensate Yuba Water). As explained in Yuba Water (2024a), the most likely outcome would be that the CVP and the SWP would divert that water as part of their project supplies. The proposed alternative therefore would not reduce any alleged environmental effects in the south Delta as the Accord Extension comment suggests. Yuba Water (2024b) concluded that a "Reduced Transfers" alternative therefore is either infeasible (in the event that the SWRCB adopts unimpaired flow-based requirements discussed in the 2023 DSR) or is unlikely to actually reduce south Delta diversions or significantly reduce any existing environmental impacts, assuming the SWRCB does not adopt unimpaired flow-based requirements as discussed in the DSR (SWRCB 2023).

Finally, because the Accord Extension commenters' proposed "Reduced Transfers" alternative was premised on the SWRCB's adoption of unimpaired flow-based requirements as discussed in the DSR, it would be associated with lower Yuba River water temperatures that would be highly adverse for the river's fish. As pages 26 through 29 of Yuba Water's comments on the DSR explained, technical analyses that Yuba Water previously had submitted to FERC demonstrated that implementing unimpaired flow-based requirements like those discussed in the DSR would increase the lower Yuba River's water temperatures up to 13° Fahrenheit (°F) during the summer and increase temperatures at other times to levels that would be highly adverse for lower Yuba

River salmon and steelhead.[40] Accordingly, implementation of the SWRCB's proposals that are the premise for a "Reduced Transfers" alternative would have significantly worse impacts on the lower Yuba River's sensitive fish compared to the Accord Extension (YCWA 2024b). A "Reduced Transfers" alternative therefore would not be an environmentally superior alternative, as the commentor suggests, or even an appropriate alternative under CEQA (California Code of Regulations, Title 14, Section 15126.6[a], [c], [f].). Accordingly, this alternative was eliminated from further consideration in the Accord Extension SEIR (YCWA 2024b) not only because it would not meet most of the project objectives but also because it would not eliminate or reduce the project's significant impacts.

For the reasons described above, a "Reduced Transfers alternative" would not feasibly attain the basic project objectives identified for the Proposed Projects, including those related to Yuba Water's ability to implement protections for lower Yuba River fisheries resources in a way that improves or provides additional protections for ESA-listed fish species and their designated critical habitat in the lower Yuba River. A "Reduced Transfers alternative" also would not meet other project objectives including the ability to: (1) continue to provide the existing level of water supply reliability support throughout the state consistent with the Lower Yuba River Accord Water Purchase Agreement; and (2) generate sufficient long-term, predictable revenue for Yuba Water's various projects and programs. In addition, a "Reduced Transfers alternative" would not avoid or substantially reduce potentially significant impacts of the Proposed Projects. Accordingly, this alternative was eliminated from further consideration not only because it would not meet most of the project objectives but also because it would not eliminate or reduce the Proposed Projects' significant impacts.

3.6.3.4 Narrows 1 or Narrows 2 Powerhouse Intake Extension Considerations and Rationale for not Advancing the Extension

Over the course of the FERC relicensing process for the YRDP and during the public scoping process for this DEIR, it has been suggested that Yuba Water should consider an intake extension that would be constructed at either the YRDP's Narrows 2 Powerhouse or the Narrows 1 Powerhouse.

Given the interest expressed in considering potential intake extensions at the Narrows 1 and/or Narrows 2 powerhouses to further enhance water temperatures in the lower Yuba River, Yuba Water prepared a technical analysis (**Appendix 3B**) that analyzed intake extension and temperature control projects at its Narrows 1 and 2 powerhouses in response to comments filed by FERC Relicensing Participants in connection with FERC's March 2021 AIR. Yuba Water's analysis utilized a series of modeled scenarios to demonstrate whether intake extensions and temperature control projects as suggested by these other parties would achieve lower water temperatures in the lower Yuba River during the late summer and early fall of dry and critically-dry years to benefit listed fish species. The conclusions presented in Yuba Water's (2023b)

[40] Yuba Water submitted with its comments to the SWRCB the relevant technical memoranda that it previously had submitted to FERC. Those memoranda were Exhibits G and H and are included in the administrative record for the Accord Extension SEIR (YCWA 2024a). Those memoranda also are present in FERC's eLibrary at Accession Numbers 20211207-5175 and 20220307-5273. The commenters are parties to FERC's proceeding for the YRDP's relicensing and therefore should have received notice of Yuba Water's submission of those memoranda to FERC at the time of their submission. In addition, as discussed above, the SWRCB makes publicly available all comments on the DSR.

technical report are supported by a series of future operating and intake extension scenarios that have been modeled by Yuba Water and filed with FERC.

3.6.3.4.1 Lower Yuba River Water Temperatures

To investigate the efficacy of non-flow actions to lower water temperatures in the lower Yuba River, Yuba Water previously evaluated a Narrows 1 Powerhouse intake extension. A Narrows 1 intake extension would involve modifications at the USACE's Narrows 1 intake in Englebright Reservoir. Narrows 1 was selected as the powerhouse for further analysis of an intake extension rather than Narrows 2 for the following reasons.

- The target time identified for further temperature reduction of September and early October is the time when the Narrows 2 Powerhouse is shut down for maintenance. This is the only time when planned flows are low enough each year to meet downstream requirements with the Narrows 1 Powerhouse.
- The typical flow release rate below Englebright Dam during the September and October period in Dry and Critically Dry years ranges from 500 to 900 cfs, averaging 770 cfs. The Narrows 1 Powerhouse capacity is 730 cfs while the Narrows 2 Powerhouse capacity is 3,400 cfs. Because the September-October period is the period with which FERC is concerned for temperature management and because flow releases during that period are within the Narrows 1 Powerhouse's release capacity during that period and Yuba Water therefore conducts annual maintenance on the Narrows 2 Powerhouse then, constructing an intake extension at the 3,400-cfs Narrows 2 Powerhouse for operation during September and early October would not make sense and likely would result in an inappropriate expenditure of tens of millions of dollars of public funds for no benefit greater than could be achieved at the Narrows 1 Powerhouse.
- Initial modeling identified that the intake extension flows would need to be blended with flows from the existing intake to provide suitable water temperatures for the greatest duration, which was only about 28 days. The maximum flow rate through the intake extension would be 30% of the total flow to the intake, or a flow averaging about 230 cfs, less than 7% of the capacity of the Narrows 2 Powerhouse Intake. Achieving these low flow levels for mixing at Narrows 2 would be difficult to achieve because the Narrows 2 intake capacity is over 3,400 cfs.

Initial modeling of a Narrows 1 Powerhouse intake extension showed that a water temperature benefit could only be provided for a limited period of about 28 days. To provide reduced water temperatures, a gradual ramping of intake extension flows would be needed to initiate use of the intake. The limited duration is a result of Englebright Reservoir containing a small cold water pool that would be exhausted quickly. Once the small cold water pool is exhausted, no additional benefit can be derived and release water temperatures would be higher than without use of an intake extension. The need to blend the flow of water through the intake extension with flow from the existing intake at variable rates would require a complex intake structure and controls. The analysis also showed that with existing accumulated sedimentation in Englebright Reservoir and continued sedimentation, the volume of cold water in Englebright available in the fall continues to reduce and further limits the small amount of temperature reduction an intake extension would achieve. In the future sedimentation will all but eliminate a cold water pool in Englebright Reservoir.

3.6.3.4.2 Engineering and Environmental Feasibility Considerations

Yuba Water's (2023a) assessment also demonstrated that there would be significant limitations, uncertain benefits, and large costs of implementing an action involving an intake extension.

First, any major structural modification of a federally owned dam (i.e., Englebright Dam) would likely require Congressional approval.

Second, because of uncontrolled flow into Englebright Reservoir and the need to continuously provide flow to the lower Yuba River to maintain cooler temperatures, the reservoir could not be de-watered to construct the intake extension facilities and construction would have to be completed underwater at depths up to 150 ft below the normal operating pool water surface elevation. An intake extension project would have to include a temperature control device (TCD) with a tower extending well above the flood flow elevation, which would have to be constructed into the lakebed below substantial sediment deposits, and would have to withstand the force of major flood flows.

Third, because a conceptual design has not been developed and would take extensive investigation, a rough estimate of cost for an intake extension was not developed, but would likely be very expensive (e.g., in excess of $77 million) based on costs incurred for water temperature control devices at other reservoirs (see Reclamation (2020) report titled "Review of Temperature Control Options for Reservoir Release Flows").

Fourth, in addition to several unique engineering challenges associated with Englebright Dam and Reservoir[41], the greatest challenge, and potential fatal flaw in attempting to construct an intake extension facility at Englebright Dam and Reservoir is the documented existence of contaminated sediments at depths where the deeper intakes would have to be located. It is well documented by the USGS that sediments at the bottom of Englebright Reservoir are substantial in volume and are heavily laden with mercury, as well as other metals (USGS 2006). The USGS cautioned about the hazard of releasing this material into the water column which would be transported downstream "*The environmental risk associated with release of fine-grained sediment containing an elevated concentration of mercury is related to the potential for the mercury to be converted to the more toxic form of methylmercury if conditions are favorable"* (USGS 2006, p. 4).

Given the significant potential for downstream contamination due to release of mercury in its various forms, including methylmercury during construction, extensive measures would have to be employed to implement an intake extension facility. Even with such measures, it would likely be impossible to completely contain the construction site to avoid dispersing contaminated sediments to the reservoir and downstream. Because of the presence of mercury in the Englebright Reservoir sediments and because construction of a TCD tower would require extensive disturbance of these sediments to construct a foundation, environmental impacts due to the release of mercury into the water column would be a significant concern for this type of project. Any intake extension project would have to attempt to mitigate the release of mercury and other sediment constituents into the water column that would then flow downstream. The cost of such mitigation activities is unknown at this time but would be large and significantly increase the project's costs. Given all these factors, and excluding the potential cost of sediment control, an order of magnitude estimate

[41] See Section 9 (TCD Design Concepts) of Yuba Water's (2023b) report.

of total project cost is estimated to be at least $80 million to $120 million or more, in 2023 dollars (YCWA 2023). Given the minimal temperature benefit an intake extension would produce, it would not be an economically feasible or reasonable alternative.

3.6.3.4.3 Intake Extension Summary Conclusions

In summary, Yuba Water investigated the possibility of an intake extension at both Narrows 1 and Narrows 2. For the reasons discussed above, an intake extension at Narrows 1 would have the capacity to release almost all flows in the September-October period and is the logical powerhouse for a facility of this type given the September-October period with which FERC is concerned and how Yuba Water must operate during that period. As to Narrows 1, the investigation demonstrated that a Narrows 1 intake extension would: (1) be complex and expensive; (2) involve modification to a USACE facility that is not part of either the YRDP or the Narrows Project; (3) require disturbing mercury laden sediments in the reservoir to construct an intake extension and (4) provide only a small temperature reduction benefit.

As detailed in Yuba Water (2023b), neither a Narrows 1 nor a Narrows 2 intake extension or a TCD for either powerhouse intake is a viable option for providing cooler temperatures to the lower Yuba River. This conclusion is based on the fundamental mechanisms of the temperature regime of Englebright Reservoir, the small and diminishing volume of the reservoir and its cold water pool, complexities of structures needed to attempt to blend cold water with upper intake releases that would be needed to extend the duration of any colder releases, the substantial costs of the environmental and structural challenges of constructing such extension, and ultimately the limited uncertain cold water benefits that can be achieved. In addition, 2048 was estimated as the time needed to obtain a new FERC license, conduct engineering and planning, and obtain all other necessary permits and approvals and complete the construction of a TCD at Narrows 1 or Narrows 2. Given this timing, a TCD has a major disadvantage over Yuba Water's Offer of Settlement measures which could be implemented immediately upon FERC's issuance of a new license.

Consistent with Englebright Dam's intended design and purpose as a debris collection dam, there is ongoing sediment accumulation within Englebright Reservoir, including accumulation of mercury contamination within the reservoir sediments. The current and projected accumulation of this material presents significant problems for the construction and operation of an "intake extension." The "intake extension" conceptually proposed in 2000 would provide minimal water temperature benefit, and the potential suggested alternative of a TCD also would be difficult to construct and provide little benefit, particularly in comparison with its likely very high cost. Additionally, any construction within Englebright Reservoir would take many years to implement, which would delay any of the likely marginal benefits for ESA-list fish in the lower Yuba River. As discussed above, Yuba Water's February 27, 2023 filing[42] with FERC provided additional details regarding the limitations and challenges of constructing and operating a TCD within Englebright Reservoir for the purposes of protecting and enhancing ESA-listed species and their designated critical habitat in the lower Yuba River.

In addition to the technical analysis and rationale discussed above, an alternative involving an intake extension at either the YRDP Narrows 2 Powerhouse or the Narrows Project is not evaluated

[42] Available in FERC's eLibrary at Accession No. 20230227-5265 (Filed on February 27, 2023)

in this DEIR because such an alternative would not feasibly attain most of the basic project objectives identified for the YRDP and the Narrows Project, including those related to Yuba Water's ability to implement protections for lower Yuba River fisheries resources in a way that: (1) improves Yuba River water temperatures to protect ESA-listed fish species and their designated critical habitat; but also (2) fairly allocates protective activities such that no entity is disproportionately burdened with a responsibility to mitigate watershed impacts caused by other entities. As presented in Yuba Water's (2023b) technical report, an extension of the Narrows 1 intake or the Narrows 2 intake would not provide a sustainable strategy for lower Yuba River water temperature enhancement for the anticipated terms of the YRDP or Narrows Project FERC licenses. Accordingly, this alternative was eliminated from further consideration not only because it would not meet most of the project objectives but also because it would not eliminate or reduce the Proposed Projects' significant impacts.

3.6.4 Other Alternatives Considered

3.6.4.1 Implement Fish Passage into the Upper Yuba River Watershed

Over the course of the FERC relicensing process for the YRDP, some Relicensing Participants have suggested that anadromous fish passage into the upper Yuba River Watershed should be considered as an alternative for the YRDP Relicensing Project.

Since its construction in 1941, USACE's Englebright Dam has restricted salmon and steelhead to the lower 24 miles of the Yuba River, and it is currently the upstream limit of salmon and steelhead migration. Because Englebright Dam was built without fish passage facilities, it is a complete barrier to upstream fish passage (FERC 2018; 2019). While a variety of fishways have been used in California, Oregon, and Washington and have successfully transported salmon past dams for many years, fish passage into the upper watershed above USACE's Englebright Dam has not been provided on the Yuba River. In its 2014 Recovery Plan, NMFS identified Englebright Dam as one of the dams where fish passage would contribute to recovery of the Central Valley spring-run Chinook salmon ESU and the Central Valley steelhead DPS.

FERC's September 30, 2011 Study Plan Determination[43] did not require anadromous fish passage studies related to YRDP facilities above Englebright Dam because of the lack of nexus between those facilities and impacts to anadromous fish. FERC (2011) recognized that the Narrows 2 facilities that are part of the YRDP were not constructed until after USACE's Englebright Dam was erected, and that anadromous fish have not occurred upstream of Englebright Dam since construction was completed in 1941. USACE's Englebright Dam blocked upstream fish passage for almost 25 years before the development of the Narrows 2 Powerhouse. Furthermore, FERC (2011) stated that it was unaware of any hydroelectric generating facility that serves as a passage route for upstream migrating fish. The Narrows 2 Powerhouse is located nearly 400 feet downstream from the Englebright Dam. Therefore, potential project effects on upstream fish passage are limited to the 400 feet between the Narrows 2 Powerhouse outlet and Englebright Dam, which is the next barrier for upstream fish passage. Due to the failure of Relicensing Participants to demonstrate a nexus between studying anadromous fish passage upstream of Englebright Dam and the Narrows 2 Powerhouse, FERC did not adopt requests to study fish

[43] Available in FERC's eLibrary at Accession No. 20110930-3051 (Filed on September 30, 2011)

passage above Englebright Dam and concluded that fish passage studies into the upper watershed were not necessary (FERC 2011).[44] The Study Plan Determination (FERC 2011) concluded that the required studies for the YRDP relicensing, along with studies being conducted by the RMT, would provide the information necessary to conduct an analysis of project effects on federally listed salmonids in the lower Yuba River (downstream of Englebright Dam) and Essential Fish Habitat (EFH) in all project-affected stream reaches.

FERC's December 28, 2011 Formal Study Dispute Resolution Determination[45] for the YRDP reaffirmed FERC's agreement with the Study Plan Determination that there is no nexus between project effects and anadromous fish upstream of Englebright Dam because anadromous fish are not present above the dam and therefore there is no need to study fish passage at facilities above Englebright Dam.

FERC's (2018) Draft EIS[46] appropriately contained separate discussions of the existing blockage of upstream anadromous fish passage by Englebright Dam and potential future projects to transport anadromous salmonids between the lower Yuba River and the North Yuba River. Specifically, FERC (2018, p. 3-54 and p. 3-203) clearly explained the historical and ongoing impacts of USACE's Englebright Dam on fisheries and aquatic resources. Some Relicensing Participants recommended that a placeholder be reserved in any new FERC license to implement any future fish passage actions for Daguerre Point and Englebright dams. As discussed in FERC's (2019) FEIS,[47] FERC licenses already include a standard fish and wildlife reopener article that could be used to assess the need for any additional fish and wildlife measures during a license term.

An alternative involving fish passage into the upper watershed could require Yuba Water to spend hundreds of millions of dollars to move anadromous fish upstream of the federal government's Englebright Dam – which was built in the early 1940s to contain hydraulic mining debris. Such an alternative would present a dangerous financial risk[48] to Yuba Water by potentially increasing annual expenses, and decreasing hydroelectric and water-sale annual revenues, by many millions of dollars in each direction. Facing such a serious financial constraint, Yuba Water would be forced to reduce its expenditures on flood damage reduction projects, habitat and watershed restoration, recreation, and community grants. Such an outcome also would further burden vulnerable populations in Yuba County's disadvantaged communities.

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[44] FERC's (2011) decision was also based upon the fact that, although there have been several efforts to study anadromous fish passage into the upper Yuba River Watershed, no fish passage plans have been developed, approved, or funded. Accordingly, it is unknown when fish passage might occur, how fish passage would be accomplished, or which part of the watershed would be targeted.

[45] Available in FERC's eLibrary at Accession No. 20111228-3031 (Filed on December 28, 2011)

[46] Available in FERC's eLibrary at Accession No. 20180530-3011 (Filed on May 30, 2018)

[47] Available in FERC's eLibrary at Accession No. 20190102-3000 (Filed on January 2, 2019).

[48] Concept-level cost estimates of several fish passage facility options were developed for the Yuba Salmon Partnership (YSP), which included Yuba Water, NMFS, CDFW, American Rivers, and the California Sport Fishing Protection Alliance. Each facility cost estimate was bounded by a "low" and "high" cost estimate to reflect the uncertainties in design at such an early planning stage. Cost estimates included: (a) the Opinion of Probable Construction Cost (OPCC) for various fish passage program facilities (in 2015 dollars); and (b) the Net Present Value (NPV) for construction and operation of potential fish passage program facilities over a 50 year period, using the OPCC cost estimates for construction costs. Construction-only costs were estimated at $380 million based on established design parameters, biological constraints, and challenging site conditions. Additionally, O&M and monitoring were estimated to cost about $4.1 million per year in 2016 dollars. Total nominal costs for a full-scale implementation over a 50-year time period were estimated at $1.19 billion and NPV costs were $630 million with low (-35%) and high (+50%) bounds around those numbers.

For the reasons discussed above (i.e., lack of project nexus), Yuba Water does not propose any alternatives that would provide upstream or downstream fish passage for the Proposed Projects. An alternative involving fish passage would not avoid or reduce potential impacts of the YRDP or the Narrows Project under CEQA. In addition, under California Fish & Game Code sections 5900, 5931 and 5938, the obligation for fish passage associated with a federal dam is with the United States. Under those statutes, the fact that someone else has attached a facility to a dam does not make it the dam's "owner." For example, in a 2015 decision, the California Court of Appeal decided that CDFW's modification of a dam owned by a city by, among other things, installing a fish ladder, did not make CDFW an "owner" of the dam.[49] Accordingly, this alternative was eliminated from further consideration because it would not eliminate or reduce the Proposed Projects' significant impacts.

3.6.4.2 Federal Agency Takeover of the YRDP

Similar to the Narrows Project, federal takeover of the YRDP is not a reasonably foreseeable alternative. Although not specifically addressed in FERC's (2019) FEIS, federal takeover and operation of the YRDP would require Congressional approval. While that fact alone would not preclude further consideration of such an alternative, there is no evidence to indicate that federal takeover should be recommended to Congress. Similar to the Narrows Project, no Relicensing Participant or other party has suggested federal takeover of the YRDP would be appropriate, and no federal agency has expressed an interest in operating the YRDP. Therefore, federal takeover of the YRDP is not a reasonably foreseeable alternative.[50]

In addition to the rationale provided above, an alternative involving the federal government takeover of the YRDP is not evaluated in this DEIR because such an alternative would not feasibly attain many of the basic project objectives identified for the YRDP, particularly those related to Yuba Water's ability to: (1) support California's power requirements and needs by providing renewable hydropower generation; (2) generate sufficient long-term, predictable revenue for Yuba Water's various projects and programs; and (3) obtain stability and predictability in long-term YRDP operations to justify Yuba Water investments for modifications and improvements to its infrastructure. Accordingly, this alternative was eliminated from further consideration not only because it would not meet most of the project objectives but also because it would not eliminate or reduce the Proposed Projects' significant impacts.

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[49] *Goddard v. Dept. Of Fish & Wildlife* (2015) 243 Cal.App.4th 350, 355-356, 363-366.

[50] In addition, the federal takeover provisions in the FPA are inapplicable to projects owned by a state or municipality such as Yuba Water. See Pub. L. No. 278, 67 Stat. 587 (1953) and 16 U.S.C. § 828.

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CHAPTER 4.0

FRAMEWORK FOR THE ENVIRONMENTAL ANALYSIS

4.1 Introduction

The intent of this chapter is to describe the scope and extent of the environmental resource impact evaluations that are presented in this DEIR, particularly with respect to the key elements and analytical framework that is common among the respective resource analyses. The analytical framework described in this chapter provides readers of this DEIR with context to aid them during review of the document. Specifically, this chapter presents an overview of the following.

- The overall organization and content of the resource-specific analyses in the DEIR that meet CEQA (Pub. Resources Code § 21000 et seq.) content requirements.
- The environmental resources that are evaluated in this DEIR, as well as any significance criteria (or portions thereof) for resources that are not applicable to the evaluation of the Proposed Action and alternatives, and the rationale why some resources have been dismissed from detailed evaluation.
- Assumptions about the environmental setting/existing condition.
- The analytical approach used to support: (1) how the resource-specific analyses address environmental setting information; (2) the project areas for analysis; (3) baseline assumptions for comparing the Proposed Projects and the alternatives to determine the magnitude of impact; (4) construction, operational, and maintenance impacts; (5) determination of whether the magnitude of the impact is significant; (6) alternative comparisons; and (7) mitigation measures where a potential impact is determined to be significant.
- Assumptions about the analyses' level of detail.
- Assumptions regarding the use and integration of previously conducted analyses from the ongoing FERC relicensing processes for the YRDP and Narrows Project to support the CEQA analyses.
- Approach to evaluating potential cumulative effects and climate change effects.

Resource-specific information about the analytical approach and methodology for evaluating the Proposed Projects and the alternatives considered is provided in the respective individual resource chapters included in this DEIR.

4.2 Organization of the DEIR

This DEIR begins with several introductory chapters and contains appendices that provide important foundations for analyses. The early chapters provide detail about the history and purpose of the YRDP and Narrows Projects (Chapter 1 – Introduction), a description of the Proposed

Projects (Chapter 2 - Project Description), a description of the alternatives considered (Chapter 3 - Alternatives), and the intended uses of this document (Chapter 1).

This DEIR includes analytical sections for the following resource categories: surface water resources, groundwater resources, power production and energy consumption, surface water quality, fisheries resources, biological resources (terrestrial and wildlife), recreation, visual resources, cultural resources, tribal cultural resources, air quality, greenhouse gas emissions, geology/soils, hazards and hazardous materials, wildfire, transportation, noise, agriculture and forest resources, land use/planning, public services, utilities and service systems, and other CEQA considerations (e.g., growth inducement, climate change). Chapters 5 through 25 each contain the following required CEQA components for these resource categories, which are generally organized into the sections described below.

- **Environmental Setting/Existing Condition**. This section of each resource chapter describes existing conditions at the time that the NOP was issued (i.e., October 28, 2024) for each resource in the Project Area where potential impacts may occur. The geographic scope of the environmental setting may vary for each resource depending on impact mechanisms and the extent of the area in which impacts are expected to occur for a resource. The environmental setting section in each resource chapter identifies and characterizes existing conditions for the resource and describes historical changes and trends affecting the resource based on the best available information. Unless otherwise noted, the existing conditions described in the Environmental Setting section are used as the CEQA baseline when comparing alternatives to determine the magnitude of impact.
- **Regulatory Setting**. The applicable laws, regulations, and programs considered in the assessment of potential project impacts are provided in this section of each resource chapter, as appropriate. Applicable laws, regulations, and programs associated with state and federal agencies that have a review or potential approval responsibility have also been considered in the development of CEQA impact thresholds or are otherwise considered in the assessment of environmental impacts. A listing of some of the agencies and their respective potential review and approval responsibilities, in addition to those under CEQA, is provided in Chapter 1.
- **Impact Assessment Methodology.** This section of each resource chapter describes the resource-specific methodology used to identify and assess potential environmental impacts that may result from implementing the Proposed Projects or an alternative.
- **Impact Indicators and Significance Criteria.** This section of each resource chapter describes the impact indicators and a threshold(s) of significance as an identifiable qualitative, quantitative, or performance-level threshold, where exceedance of the threshold would be determined to be a significant environmental impact, and being under the threshold would likely be considered a less-than-significant impact.
- **Environmental Impact Analysis.** This section of each resource chapter describes the direct, indirect, and cumulative environmental impacts associated with a particular resource that may result from construction, operation, or maintenance of the Proposed Projects (or an alternative) and is organized into subsections, as described below. This section of each resource chapter: (1) describes direct and reasonably foreseeable indirect environmental impacts associated with the No Project Alternative (as applicable to both

the YRDP and the Narrows Project), the Proposed Projects, and alternatives; (2) explains the CEQA significance conclusions; and (3) identifies mitigation measures (if any) that could be used to reduce or avoid potentially significant environmental impacts. For each resource, specific measures are proposed when feasible and necessary to avoid, reduce, minimize, or compensate for potentially significant environmental impacts of the Proposed Projects. This is consistent with CEQA's specific requirement that, whenever possible, agency decision makers adopt feasible mitigation to reduce a project's significant impacts to a less than significant level (CEQA Guidelines § 15126.4). For each resource, the potentially significant environmental impacts (if any) associated with mitigation measures are discussed and analyzed. This section further evaluates whether the proposed mitigation measures would result in reducing the potential impact to a less than significant level, as well as whether the measure(s) are technically and economically feasible to implement, thus demonstrating that the mitigation measures will meaningfully lessen the potential negative effects on the environment.

- **Cumulative Impact Assessment.** This section of each resource chapter discusses whether there would be a potentially cumulative significant environmental impact from the Proposed Projects' effects in combination with those of closely related past, present, and reasonably foreseeable probable future projects and determines whether the Proposed Projects (or a Project Alternative) could make a cumulatively considerable contribution to any cumulatively significant impacts. Cumulatively considerable means that "*the incremental effects of the individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects*" (CEQA Guidelines § 15130(a)). This section further identifies feasible mitigation measures (if any) that could be used to reduce or avoid any potentially significant cumulative impacts of the Proposed Projects (or a Project Alternative).

4.2.1 Environmental Resources Not Evaluated in Detail

During preparation of this DEIR, it became evident that some environmental resources are present in the Project Area, but no impact on these resources was identified that could potentially occur as a result of the Proposed Projects and alternatives. Based upon a review of the CEQA Appendix G Environmental Checklist, the scope of this DEIR has been focused on those environmental resources that potentially would be significantly affected by implementation of the Proposed Projects, and the following environmental topics have been eliminated from detailed consideration in this DEIR. These topics were dismissed from further analysis, for the reasons summarized below and discussed in more detail in **Appendix 4A**.

- **Mineral Resources** - The Proposed Projects do not involve the extraction of any mineral resources and would not: (1) result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state; or (2) result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.
- **Population and Housing** - The Proposed Projects do not involve the construction of new homes or businesses (or the substantial expansion of roads and infrastructure) that could result in growth-inducing effects. Therefore, the Proposed Projects would not induce substantial unplanned population growth in an area, either directly (for example, by

proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). The Proposed Projects also would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. Water provided by the Proposed Projects would be used to fill existing needs, not to support new, unplanned growth. Therefore, the Proposed Projects would not result in growth-inducing impacts, cause or remove an obstacle to growth, or result in growth-inducing impacts associated with changes in water deliveries.

4.3 Approach to the CEQA Analysis

CEQA requires the preparation of an EIR when there is substantial evidence in light of the entire record that supports a fair argument that a project, such as approval and implementation of the Proposed Projects here, may have a significant impact on the environment. This DEIR discloses and presents analysis of the potential environmental impacts of the Proposed Projects and alternatives and describes ways to mitigate or avoid potentially significant effects. Pursuant to CEQA Guidelines Section 15126.6(a), this DEIR describes a range of reasonable alternatives that would feasibly attain all or most of the basic project objectives and, where possible, avoid or substantially lessen significant environmental impacts.

4.3.1 Geographic Extent of the Environmental Setting

4.3.1.1 YRDP

The geographic area (aka Project Area) that could be affected by the YRDP and that has been identified for this DEIR includes the Yuba River Watershed and the streams, waterbodies, groundwater basins, and facilities that could be particularly affected by changes in Yuba River outflow to the Feather River. These areas (Figure 4.3-1) include:

- New Bullards Bar (NBB) Reservoir.
- North Yuba River below NBBD to the confluence with the Middle Yuba River.
- Our House Diversion Dam (OHDD) Impoundment on the Middle Yuba River.
- Middle Yuba River (i.e., OHDD Reach) from OHDD to the confluence with the North Yuba River.
- Oregon Creek (Log Cabin Diversion Dam Reach) downstream to the confluence with Middle Yuba River.
- Englebright Reservoir.
- Lower Yuba River to the confluence with the Feather River.
- North Yuba and South Yuba Groundwater Subbasins (Yuba Subbasins) of the Sacramento Valley Groundwater Basin (see Chapter 6).

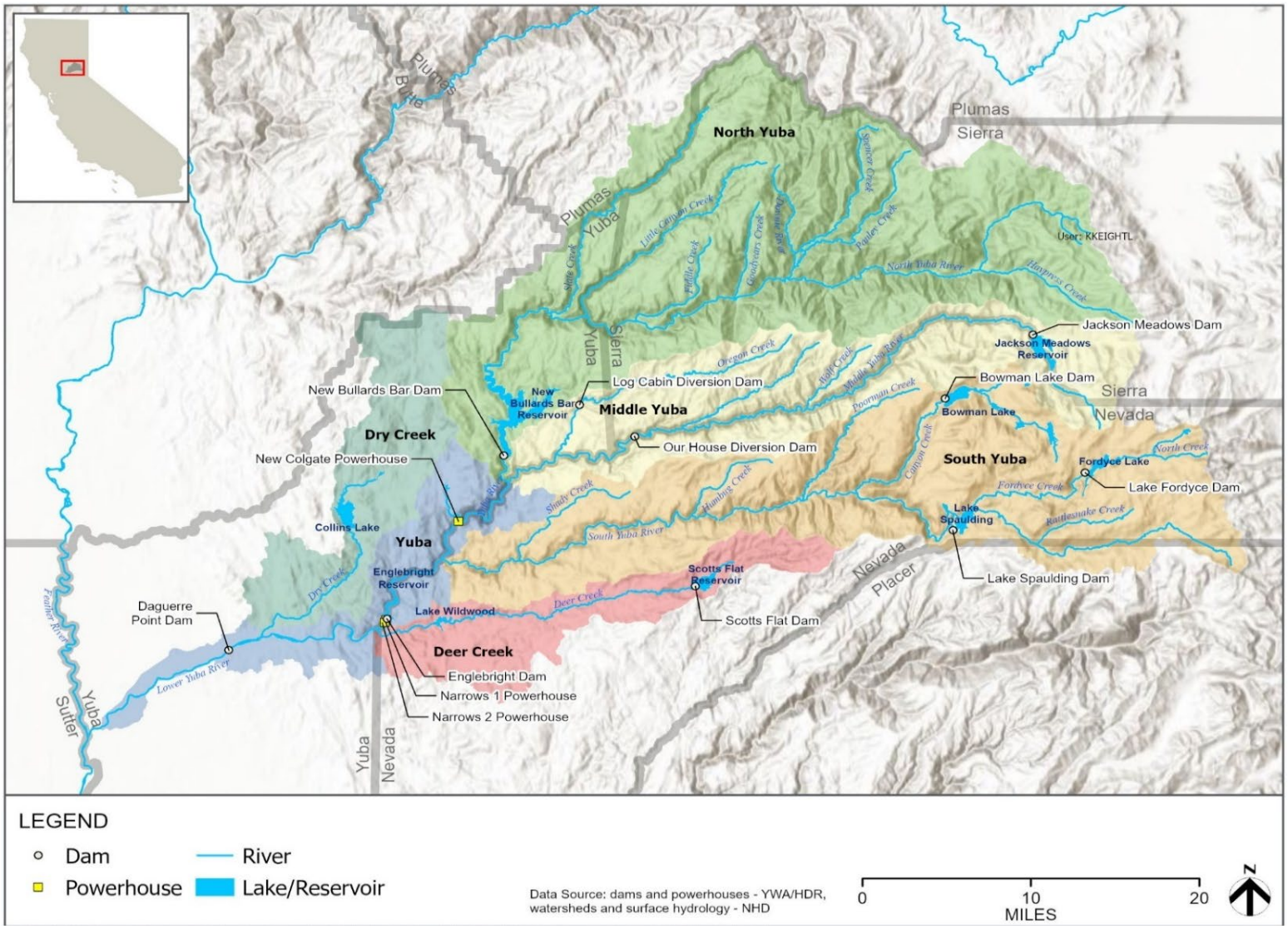

Figure 4.3-1. Geographic extent of the Project Area for the YRDP.[1]

[1] NOTE: For a limited number of water-related resources (i.e., surface water resources, surface water quality and fisheries), the potential exists for changes in Yuba River outflow to also affect hydrologic conditions in the lower Feather River, the lower Sacramento River and the Delta.

Due to the potential for indirect impacts and indirect cumulative impacts that may occur as a result of potential YB/DS operational changes associated with the provision of 15.6 TAF under Alternative 1 (see Chapter 3 of this DEIR), the following additional areas are included in the Project Area for certain environmental resources (i.e., surface water resources, surface water quality and fisheries).

- Jackson Meadows Reservoir.
- Middle Yuba River below Jackson Meadows Dam and Milton Diversion Dam to the OHDD Impoundment.
- Bowman Lake.
- Canyon Creek below Bowman Lake and Bowman-Spaulding Diversion Dam to its confluence with the South Yuba River.
- Fordyce Lake.
- Fordyce Creek from Fordyce Lake to Lake Spaulding.
- Lake Spaulding.
- South Yuba River below Lake Spaulding to Englebright Reservoir.

In addition, for a limited number of water-related resources (i.e., surface water resources, surface water quality and fisheries), the potential also exists for changes in Yuba River outflow to affect hydrologic conditions in the lower Feather River, the lower Sacramento River and the Delta (see discussion below).

4.3.1.2 Narrows Project

The geographic area that could be affected by the Narrows Project and that has been identified for this DEIR includes the lower Yuba River and facilities that could be affected by changes in Yuba River outflow to the Feather River. These areas include:

- Lower Yuba River to the confluence with the Feather River.

For the Narrows Project, the geographic extent of the lower Yuba River extending from Englebright Dam downstream to the confluence with the Feather River also is shown in Figure 4.3-1. In addition, for a limited number of water-related resources (i.e., surface water resources, water quality and fisheries), the potential also exists for changes in Yuba River outflow to affect hydrologic conditions in the lower Feather River, the lower Sacramento River and the Delta (see discussion below).

4.3.1.3 Downstream Extent of the Project Area

Consistent with FERC's (2019; 2024a) analyses conducted for both the YRDP and the Narrows Project, it is generally not anticipated that direct, indirect or cumulative effects on environmental resources would occur downstream of the mouth of the lower Yuba River (i.e., in the lower Feather River or Sacramento River). YCWA's March 2022 response to FERC's March 2021 AIR item

2(c) included a sensitivity analysis to determine whether hydrological changes associated with the YRDP could have the potential to change flow and water temperature conditions downstream in the Feather River. To support the determination of geographic extent of the Project Area for this DEIR, Yuba Water's sensitivity analysis was updated to incorporate operations of both the YRDP and the Narrows Project, as well as recent updates to the modeling tools and applications (e.g., period of simulation) that are described in Chapter 5 of this DEIR. As discussed below, the updated sensitivity analysis reaffirms that it is generally appropriate to identify the confluence of the lower Yuba River and the Feather River as the downstream extent of the Project Area.

Flow Considerations

To investigate whether Yuba River flows under the Proposed Projects or alternatives could result in measurable changes in lower Feather River aquatic habitat conditions, the following analysis was conducted consistent with Yuba Water's March 2022 FERC AIR analysis of the potential effect of changes in Yuba River flows on the Feather River.

- Step 1. Modeled daily flows in the lower Yuba River at Marysville were averaged to obtain monthly average flows under the Proposed Projects scenario and the Base Case (Existing Condition) scenario.
- Step 2. Historical average daily flows in the Feather River near Gridley for the period of October 1, 1969 through September 30, 2021 were obtained from the DWR Water Data Library.
- Step 3. For the portion of the period of record of October 1, 1969 through September 30, 2021, the daily average flows in the lower Yuba River at Marysville under the Proposed Projects scenario and the Existing Condition were modeled, and then added to the daily average flows in the Feather River below Gridley to determine a representative Feather River flow below the Yuba River.
- Step 4. Monthly averages for the full period of record were computed based on the daily average synthetic Feather River flow below the Yuba River.
- Step 5. The percent changes in monthly average flows in the Feather River immediately downstream of the Yuba River were evaluated to investigate whether changes in lower Yuba River flows at Marysville resulting from the Proposed Projects have the potential to result in detectible changes in lower Feather River flows downstream of the confluence with the lower Yuba River.

Over the 624 months of the period evaluated (Oct 1969-Sep 2021), the average difference in monthly average flow for the Proposed Projects compared to the Existing Condition is 0.11 percent (11 one-hundredths of 1 percent). Consequently, the Proposed Projects scenario, relative to the Existing Condition, would not result in detectable changes in Feather River flows immediately downstream of the Yuba River, and changes in aquatic habitat conditions downstream of the mouth of the Yuba River would not be measurable. Similarly, the average difference in flow for Alternative 1 compared to the Future Baseline is 0.36 percent (36 one-hundredths of 1 percent) and Alternative 1 would not result in detectable changes in Feather River flows relative to the Future Baseline and changes in aquatic habitat conditions downstream of the mouth of the Yuba River would not be measurable.

Moreover, operations of DWR's SWP control relatively large flows in the lower Feather River. Thus, even if measurable changes to flows in the Yuba River were to occur, it would not be practicable to attempt to segregate potential changes in lower Feather River flow downstream of the Yuba River associated with potential changes in Yuba River outflow. This conclusion is consistent with previous analyses, as when NMFS (2016) excluded the Sacramento River downstream from the Feather River from the action area for its BO on DWR and FERC's activities at the Oroville Facilities Hydroelectric Project (FERC Project No. 2100-134), stating "*While operations of Oroville Facilities do influence flows downstream of the confluence of the Feather River and the Sacramento River, through the Delta, San Pablo and San Francisco Bays to the ocean, these flows are mixed with natural flows and those related to the operation of the CVP, so that the effects are not easily segregated. The broader effects of the Oroville Facilities as part of the coordinated operations of the CVP and SWP are analyzed in the CVP/SWP BO. These include the effects of the co-mingled flows of the CVP and SWP in the lower Sacramento River, downstream from the confluence of the Feather River with the Sacramento River, through the Sacramento-San Joaquin River Delta, Suisun Bay, San Pablo Bay, San Francisco Bay, and westward to the Pacific Ocean. Therefore, …we do not consider the downstream effects of the proposed action in terms of how the Feather River flows influence the Sacramento River and fish downstream of the Feather River…"* By contrast to most other environmental resources considered in this DEIR, the potential effects of co-mingled flows would primarily affect fisheries resources. Similar to the approach taken by NMFS (2016), considerations regarding system-wide effects of coordinated CVP/SWP operations in the Feather River, the Sacramento River and the Delta are indirectly taken into account within the context of describing the status of the species (e.g., the Central Valley spring-run Chinook salmon ESU, the California Central Valley steelhead DPS and the Southern DPS of North American green sturgeon) under the environmental setting in Chapter 9 of this DEIR.

With respect to Alternative 2 – which is included as requested by the SWRCB and others for the purpose of including an alternative representing implementation of the SWRCB's "regulatory pathway" in the draft Water Quality Control Plan for the Draft Bay-Delta Plan Update – it is recognized that the Draft Bay-Delta Plan Update is ultimately intended to provide benefits to the Delta. In 2023, the SWRCB issued its DSR, which the SWRCB stated was a draft SED under its certified regulatory program for the purposes of CEQA to analyze the environmental impacts of adopting and implementing possible Draft Bay-Delta Plan Update alternatives (SWRCB 2023). The SED was prepared prior to the release of the most recent Draft Bay-Delta Plan Update and did not include a specific proposal for moving forward with the Bay-Delta Plan (SWRCB 2023a; 2023b). In the DSR, the SWRCB's draft analysis stated that, by providing higher flows to support a connected and functioning ecosystem and benefit native fish in the Sacramento Valley and the Delta, the Draft Bay-Delta Plan Update's proposed "regulatory pathway" scenario involving unimpaired flows would be expected to improve conditions for native fish and wildlife in the Sacramento Valley and the Delta over time. The DSR, however, does not contain water temperature modeling for the Yuba River and instead only states an assumption that higher streamflows generally will lower water temperatures. Yuba Water's 2022 responses to FERC's March 2021 AIR demonstrates, however, that at least some scenarios involving increased streamflow requirements would result in significant water temperature increases that would be adverse for Chinook salmon, among other species.

Because flows exiting the lower Yuba River under Alternative 2 must pass through the lower Feather River and the lower Sacramento River before entering the Delta, a discussion of potential impacts associated with Alternative 2 must consider these downstream areas. Using a similar methodology as was used for the Proposed Projects and Alternative 1, the change in Feather River flows under Alternative 2 would be 6.61% (relative to the Existing Condition) and 6.11% (relative to the Future Baseline). However, as described above, the Feather River would likely be similarly compelled to release 55% of unimpaired flows, so any quantified evaluation of the effect of flows from the Yuba River is not possible. Because implementation of the SWRCB's Draft Bay-Delta Plan Update (i.e., the unimpaired flows identified in a "regulatory pathway" scenario) would not only apply to Yuba Water, but to many other entities (including those that manage the CVP and the SWP), it would be speculative to make operational assumptions about how the SWRCB's Draft Bay-Delta Plan Update could be implemented throughout the Sacramento Valley (e.g., Feather River, Sacramento River, Delta) for modeling purposes. Since 2019, only two approaches to modeling how the SWRCB's Draft Bay-Delta Plan Update could be implemented have been undertaken by the state. More recently, many conditions have changed and a SWRCB Draft Bay-Delta Plan Update potential "regulatory pathway" scenario continues to evolve as a result of comments that the SWRCB has received on its DSR (SWRCB 2023), comments on its *October 2024 Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed* (SWRCB 2024), comments from SWRCB workshops held during 2024 and working meetings that are ongoing (SWRCB 2025).

Although Yuba Water has not speculated about how the SWRCB's Draft Bay-Delta Plan Update "regulatory pathway" could be implemented at the state-wide level, Yuba Water has investigated how changed YRDP operations as part of the SWRCB's Draft Bay-Delta Plan Update would be expected to affect flows in the lower Yuba River. Yuba Water's modeling conducted to evaluate Alternative 2 suggests that flow changes in the lower Yuba River associated with the regulatory pathway represented by the SWRCB's Draft Bay-Delta Plan Update would generally occur within the same range of hydrologic conditions that resulted over the 624 months of the period (Oct 1969-Sep 2021) evaluated for the sensitivity analysis described in the fourth paragraph above.

Water Temperature Considerations

Because Yuba Water's Relicensing Water Temperature Model (Temp Model) does not simulate changes in lower Feather River water temperatures, it is not possible to make a direct comparison of modeled daily water temperature changes at Marysville in the lower Yuba River with potential daily water temperature changes downstream in the lower Feather River. Therefore, to investigate whether changes in Yuba River water temperatures under the Proposed Projects could result in measurable changes in lower Feather River aquatic habitat conditions, the following analysis was conducted consistent with Yuba Water's March 2022 FERC AIR analysis of the potential effect of changes in Yuba River flows on the Feather River.

- Step 1. Modeled daily water temperatures in the lower Yuba River at Marysville were averaged to obtain monthly average water temperatures under the Proposed Projects scenario and the Base Case (Existing Condition) scenario.

- Step 2. The weighted daily average water temperature downstream from the Yuba River was computed by comparing the flow and water temperature at the mouth of the Yuba River with that from the Feather River upstream of the Yuba River. Flows were determined using the analysis described in Section 4.3.1.1.1. Water temperatures in the Feather River were developed based on the approach described in Yuba Water's March 2022 FERC AIR response using historically-measured flow and temperature data in the Feather River at Gridley.
- Step 3. For the portion of the period of record that is common between the modeling and historical data, which extends from October 28, 1980 through September 30, 2021, the flow-weighted daily average water temperature in the Feather River below its confluence with the Yuba River was computed using each day's average water temperature and flow for the Yuba River at its confluence with the Feather River, and average flow and water temperature on the Feather River upstream from the Yuba River.
- Step 4. Monthly averages for the full period of record were computed based on the daily average synthetic Feather River temperatures below the Yuba River.
- Step 5. The percent change in monthly average water temperatures in the Feather River near the confluence with the Yuba River was evaluated to investigate whether changes in lower Yuba River water temperatures at Marysville have the potential to result in detectible changes in lower Feather River water temperatures.

The period of interest for this water temperature evaluation extends from May through November. Over the 211 months of the period evaluated (November 1989-September 2021), the average difference in monthly average water temperature is 0.31 percent (31 one-hundredths of 1 percent). Consequently, the Proposed Projects, relative to the Existing Condition, would not result in detectable changes in Feather River water temperatures immediately downstream of the Yuba River, and changes in aquatic habitat conditions downstream of the mouth of the Yuba River would not be measurable. Similarly, the average difference in monthly average water temperature for Alternative 1 compared to the Future Baseline is 0.14 percent (14 one-hundredths of 1 percent) and Alternative 1 would not result in detectable changes in Feather River water temperatures immediately downstream from the mouth of the Yuba River and changes in aquatic habitat conditions downstream of the mouth of the Yuba River would not be measurable.

Therefore, based on these flow and water temperature considerations associated with the Proposed Projects, this DEIR does not include the lower Feather River or other downstream areas as part of the geographic scope of the analysis for most environmental resources. However, the SWRCB states that the Draft Bay-Delta Plan Update "regulatory pathway" (represented as Alternative 2 in this DEIR) is intended to provide benefits to the Delta. As such, certain water-related resources (i.e., surface water resources, water quality and fisheries) in this DEIR give consideration to the potential for changed conditions (both beneficial and/or adverse) that may be expected to result in areas downstream (e.g., the lower Feather River, lower Sacramento River and Delta) – these considerations are addressed in a qualitative manner.

4.3.2 CEQA Baseline (Existing Condition)

Section 15125 of the CEQA Guidelines states "*An EIR must include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."*

The CEQA Guidelines further explain that the baseline physical condition (CEQA Baseline) often reflects the "*physical environmental conditions as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced*…." In some cases, however, "*[w]here existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of the project's impacts,*" the CEQA Baseline may appropriately reflect "*historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence.*" Similarly, "*a lead agency may also use baselines consisting of both existing conditions and projected future conditions that are supported by reliable projections based on substantial evidence in the record*."

The CEQA Baseline employed in this DEIR is consistent with the principles outlined above. Because FERC is preparing a supplement to the 2019 FEIS for the YRDP and has not yet issued a NEPA environmental compliance document for the Narrows Project, Yuba Water has elected to prepare a new, standalone EIR for both the YRDP and the Narrows Project to comply with CEQA. On October 28, 2024, Yuba Water released a NOP to prepare an EIR for the YRDP and the Narrows Project (refer to Appendix 1A and 1B, Project Scoping Summary Reports and attachments for copies of the November 7, 2022 NOI and the October 28, 2024 NOP).

Consistent with the considerations of the CEQA Baseline discussed above, the existing condition for this DEIR includes the O&M activities of the YRDP and the Narrows Project in effect in 2024. Assumptions for the existing condition related to operations of the YRDP include actions required by: (1) the existing FERC license for the YRDP; (2) the minimum-flow and other flow-related actions that are part of the Lower Yuba River Accord (no expiration date in SWRCB Corrected Order WR 2008-0014); (3) Yuba Water's water rights for power described in Section 2.4.3.3.2 of Chapter 2; and (4) other existing agreements and contracts (e.g., water supply deliveries, Yuba Water's water transfers) that are described in Section 2.4.3.3 of Chapter 2. Assumptions for the existing condition related to operations of the Narrows Project include actions required by: (1) the existing FPA license for the Narrows Project; and (2) existing Yuba Water's YRDP operations. Details regarding the existing YRDP and Narrows Project facilities and operations under the CEQA Baseline (Existing Condition) are described in Chapter 2, Section 2.3 (Existing Projects).

Under the CEQA Baseline (Existing Condition), both of the FERC Proposed Projects would continue to operate into the future as they have operated since the YRDP's original FERC license ended in 2016, and no new environmental PM&E measures would be implemented. For modeling purposes, the Existing Condition is characterized as the continuation of annual 1-year FERC licenses for the YRDP, consistent with conditions occurring since 2016. Additional information on the assumptions used to characterize the Exiting Condition for modeling purposes are available in Chapter 5 and the related modeling appendices (**Appendices 5A to 5E)**.

4.3.3 Other Baseline Assumptions Used in this DEIR

To support the impact analyses conducted as part of this DEIR, Yuba Water has decided to apply a "dual baseline" approach, which involves the characterization and use of a future baseline in addition to the use of the typical Existing Condition basis of comparison under CEQA. The section below has been prepared to explain why a future baseline is being considered, and why it is appropriate to also use a future baseline as part of the analysis to be conducted for the YRDP and Narrows Project in this DEIR.

4.3.3.1 Characterization of the Future Baseline (for modeling purposes only)

As noted above Section 15125 of the CEQA Guidelines states the use of a both existing and future baselines is permissible for analytical purposes if they are supported by reliable projections based on substantial evidence in the record (Cal. Code Regs. Tit. 14, § 15125). Use of both existing and future baselines is permissible and consistent with CEQA requirements here as explained below.

Both the YRDP and the Narrows Project are seeking new 50-year licenses from FERC. As discussed above in Section 4.3.2.3 (Existing Non-Project Facilities), several other FERC projects also are currently undergoing relicensing in the upper Yuba River Watershed including: (1) PG&E's Upper Drum-Spaulding Hydroelectric Project (FERC Project No. 2310), Lower Drum Hydroelectric Project (FERC Project No. 14530) and Deer Creek Hydroelectric Project (FERC Project No. 14530); and (2) NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266). Unlike many projects that are evaluated for CEQA purposes, there are unique aspects associated with the circumstances and surrounding conditions that are in place with having multiple ongoing FERC relicensing projects in the Yuba River Watershed.

Alternative 1 (Yuba Water's Offer of Settlement) includes a contribution of 15.6 TAF of water from the YB/DS projects that would be provided under new FERC licenses for those projects. Alternative 2 also includes new FERC licenses for the upstream YB/DS projects but not the contribution of 15.6 TAF of water. Because new FERC licenses for the YB/DS projects would necessarily include upstream mandatory 4(e) flow conditions regardless of whether either Alternative was approved, comparing these alternatives to the Existing Condition (which does not include upstream 4(e) conditions) could misinform and mislead the analysis by incorrectly attributing some differences in flows and water temperatures caused by the upstream 4(e) conditions to the alternatives. Thus, an accurate assessment of the effects of Alternatives 1 and 2 requires using a baseline that includes the YB/DS mandatory 4(e) flow requirements to isolate the potential impacts associated with each alternative. This DEIR refers to that baseline condition, which assumes a new FERC license for the YD/DS projects and associated mandatory 4(e) flow requirements, as the "Future Baseline."

This DEIR evaluates the potential impacts of Alternatives 1 and 2, relative to the Existing Condition, for informational purposes only. Because these comparisons are misleading, as explained above, the DEIR does not use the Existing Condition to draw significance conclusions for impacts resulting from Alternatives 1 and 2. All significance conclusions for Alternatives 1 and 2 are based on the comparisons between those alternatives and the Future Baseline.

By contrast, and as explained previously, the appropriate baseline for evaluating the impacts of the Proposed Projects and the No Project Alternative is the Existing Condition. To enable a useful comparison (i.e., one that is not misleadingly influenced by the upstream 4(e) requirements) between the Proposed Projects and Alternatives 1 and 2, however, this DEIR evaluates the impacts of the Proposed Projects relative to both the Existing Condition and the Future Baseline. This "dual baseline" approach allows Yuba Water to (i) draw significance conclusions using appropriate baselines for the Proposed Projects and all alternatives, (ii) meaningfully evaluate the relative benefits of the Proposed Projects and all alternatives, and (iii) disclose complete modeling results for informational purposes only, while recognizing the limitations inherent in results from unrealistic or misleading scenarios (e.g., Alternatives 1 and 2 compared to the Existing Condition). This approach satisfies CEQA's purposes of allowing the public and decisionmakers to compare the potential environmental effects of the Proposed Projects and alternatives.

Use of a Future Baseline for Project-Specific Application in this DEIR

To provide a complete analysis that satisfies the regulatory requirements of CEQA and that most accurately presents and analyzes potential impacts, the environmental resource analyses that rely on hydrologic modeling in this DEIR use a "dual baseline" approach that includes the following two scenarios as bases of comparison.

- **Existing Condition** – Includes the existing operations of all four FERC relicensing projects (i.e., YRDP, the Narrows Project and YB/DS projects).
- **Future Baseline** – Includes existing operations of the YRDP and the Narrows Project, and the future operations of the YB/DS projects operating at FERC 4(e) flows.

For additional information about the modeling assumptions related to each of the bases of comparison scenarios listed above, (see Chapter 5 - Surface Water Resources) and related appendices.

4.4 Overview of Impact Analysis Framework

For this DEIR, each resource chapter provides comprehensive analyses of construction and O&M impacts associated with the Proposed Projects depending on specific impact mechanisms relevant to each resource topic. The analysis provided in each chapter is specific to the environmental resource being evaluated, the data available, and the impact mechanisms expected as a result of the YRDP and Narrows Relicensing Projects. Project elements that are not expected to have impacts on a given resource are not discussed at the same level of detail as project elements that are expected to have environmental impacts. Because construction-related impacts related to Alternative 1 and Alternative 2 are identical to those discussed for the Proposed Projects, they are not repeated in the subsequent discussion of potential impacts related to those alternatives.

For resource topics that could be affected by changes (e.g., flows, water temperatures) associated with operating the YRDP and Narrows Project facilities, modeled hydrology results were used to compare Project Alternatives. The impact analysis compares modeling outputs from one modeling scenario with outputs from another scenario to determine the potential for changes in hydrologic and environmental conditions. Parameters represented by the modeling outputs include reservoir

storages and water surface elevations, river flows, and river water temperatures. The analyses are organized to present the Proposed Projects scenarios first in each resource impact section followed by analyses of the alternatives and then the No Project Alternative.[2]

In each resource chapter of the DEIR, the subsection describing the anticipated environmental impacts and consequences discusses the potential impacts associated with the following comparisons, in the following order:

- Proposed Projects compared to the Existing Condition.
- Proposed Projects compared to the Future Baseline (water-related modeled resources only, to enable a useful comparison to Alternatives 1 and 2).
- Alternative 1 compared to the Existing Condition (as this comparison is misleading for water-related modeled resources, it is provided for those resources for informational purposes only).
- Alternative 1 compared to the Future Baseline (water-related modeled resources only).
- Alternative 2 compared to the Existing Condition (as this comparison is misleading for water-related modeled resources, it is provided for those resources for informational purposes only).
- Alternative 2 compared to the Future Baseline (water-related modeled resources only).
- No Project Alternative compared to the Existing Condition.
- Cumulative Condition (Proposed Projects) compared to the Existing Condition.
- Cumulative Condition (Alternative 1) compared to the Existing Condition.
- Cumulative Condition (Alternative 2) compared to the Existing Condition.

Modeling scenarios were developed to represent existing and future hydrologic conditions with and without implementation of the Proposed Projects and alternatives to enable an evaluation of potential environmental impacts for water-related resource. These scenarios include: (1) Existing Condition; (2) Future Baseline (water-related modeled resources only); (3) No Project Alternative; (4) Proposed Projects; (5) Alternative 1; (6) Alternative 2; (7) Cumulative Condition (Proposed Projects); (8) Cumulative Condition (Alternative 1); and (9) Cumulative Condition (Alternative 2). The hydrologic modeling and related post-processing of outputs is used to simulate Yuba Water's project operations associated with implementation of the YRDP and Narrows Relicensing Projects.

For evaluations of the Proposed Projects and alternatives that involve potential flow-related impacts on environmental resources, the Future Baseline is used as the analytical basis of

[2] As discussed in Chapter 3, the potential hypothetically exists for the following circumstances to occur under the No Project Alternative: (1) Yuba Water does not accept new FERC licenses for either the YRDP or the Narrows Project; (2) Yuba Water accepts a new FERC license for the YRDP, but not the Narrows Project; or (3) Yuba Water accepts a new FERC license for the Narrows Project, but not the YRDP. For the reasons explained in Chapter 3, there is no possibility that circumstance #3 (accept a new license for Narrows but not the YRDP) would occur. As also explained in Chapter 3, activities resulting from circumstance #2 would be very similar to those that would occur as a result of circumstance #1. For this reason, the assumptions used to characterize the No Project Alternative for quantitative analysis purposes assume the conditions that would be expected to occur if Yuba Water does not accept new FERC licenses for either the YRDP or the Narrows Project.

comparison for significance determination. Although not all environmental resource analyses may use the detailed model output results involving the Future Baseline, those resources that specifically rely upon modeling to support impact conclusions include surface water resources, surface water quality, fisheries resources, biological resources, recreation, visual resources and to a lesser extent, cultural resources.

As discussed above, this DEIR evaluates the potential impacts of Alternatives 1 and 2, relative to the Existing Condition, for informational purposes only. Because these comparisons are misleading for the reasons explained above, the DEIR does not use the Existing Condition to draw significance conclusions for impacts resulting from Alternatives 1 and 2. Significance conclusions for Alternatives 1 and 2 that pertain to simulated changes in hydrology rely upon evaluation comparisons that use the Future Baseline as the basis of comparison.

The evaluation of potential indirect impacts is only conducted for the "Alternative 1 relative to Existing Condition" and the "Alternative 1 relative to the Future Baseline" comparisons because only Alternative 1 would involve changes to hydrologic conditions in the Middle Yuba River upstream of the YRDP's OHDD and in the South Yuba River in response to the provision of 15.6 TAF from the YB/DS projects. With respect to impact determinations associated with potential indirect impacts under Alternative 1, the Future Baseline is the appropriate basis of comparison. Because the Future Baseline includes the existing operations of the YRDP and the Narrows Project, and the future operations of the YB/DS projects operating at FERC 4(e) flows, this comparison allows for meaningful comparison that isolates changes specifically due to the provision of the 15.6 TAF. As explained in Chapter 3, Alternatives, this DEIR analyzes the potential indirect impacts resulting from YB/DS operations upstream of the YRDP under Alternative 1 on a programmatic level based on the information that is currently available to Yuba Water and reasonably foreseeable assumptions about how those non-Yuba Water operations would occur to meet Federal and California regulatory requirements. To the extent that YB/DS operations under new FERC licenses would have impacts that are outside the scope of those disclosed in this EIR or in the CEQA document(s) prepared by NID or PG&E for the new YB/DS FERC licenses, those impacts will need to be addressed through subsequent project-level CEQA review before NID and PG&E accept the new licenses.

For the "Alternative 2 relative to the Existing Condition" scenario, Yuba Water determined that it is not reasonable to evaluate potential indirect impacts associated with Alternative 2 and the YB/DS projects in the upper Yuba River Watershed for the following reason. If the SWRCB adopts a "regulatory pathway" that includes a 55% unimpaired flow requirement for the Bay-Delta Plan Update, then it is anticipated that the SWRCB would seek implementation of the 55% unimpaired flow requirement through the WQCs that would be issued for the FERC relicensings that are occurring in the Yuba River Watershed. As described for Alternative 2 in Chapter 3, FERC has stated that it will be conducting the YRDP, Narrows, and YB/DS relicensings as a basin-wide proceeding. Therefore, if a 55% unimpaired flow requirement were part of the "regulatory pathway" adopted by the SWRCB as part of the Bay-Delta Plan Update, it would be reasonable to expect that all of the FERC relicensing projects (i.e., YRDP, Narrows Project and the YB/DS projects) would be required to operate in accordance with the conditions of the new FERC licenses (including the 4(e) flow requirements) that would be in effect, as well as operations necessary to comply with a 55% unimpaired flow requirement.

Comparison of model results for the different scenarios is used in the discussions of environmental effects in the following resource chapters of the DEIR:

- Chapter 5 - Surface Water Resources (Hydrology, Water Supply and Management)
- Chapter 6 - Groundwater Resources
- Chapter 7 - Power Production and Energy Consumption
- Chapter 8 - Surface Water Quality
- Chapter 9 - Fisheries Resources
- Chapter 10 - Biological (Terrestrial) Resources
- Chapter 11 - Recreation
- Chapter 12 - Visual Resources
- Chapter 13 - Cultural Resources
- Chapter 14 - Tribal Cultural Resources

4.5 Models Used for the Impact Analysis

The information provided in this Section 4.5 describes the hydrologic modeling tools that were used to support the environmental resources impact evaluations conducted in this DEIR. It provides an overview of the modeling tools, primary modeling assumptions, model inputs, and methodologies that are used to evaluate potential effects on reservoir operations, stream flow, water quality, and water temperature under the various scenarios that are analyzed in the DEIR.

4.5.1 YRDP Water Balance/Operations Model

As part of the YRDP FERC relicensing process, Yuba Water developed an operations model of the YRDP to simulate current and future operations of the YRDP using historical hydrology to define a representative range of hydrological conditions, and to output resulting flows, reservoir storage and water-surface elevations, and power generation for use by Yuba Water and the Relicensing Participants during the relicensing process. Operations for Narrows Project also are represented in the Yuba River Development Project Model (YRDPM). The YRDPM is intended to be used as a comparative model rather than a predictive one to eliminate any biases or inconsistencies in upstream operations. Potential changes in operations are measured as the relative difference in model output as it compares to a basis of comparison.

Yuba Water's YRDP AFLA model scenarios evaluated in FERC's (2019) FEIS were simulated using a hydrological period of record of WY 1970 through 2010 (41 years). Subsequent to the AFLA, the period of record was extended to a 52-year period of record (WY 1970-2021). Several updates also were made to the YRDPM to address FERC's 2021 AIR direction that the Yuba Water and the YB/DS licensees consult and develop an agreed-upon analysis of the amount of additional water from either storage or transfers to provide the necessary flow in dry and/or critically dry years (or combination of dry type years) to maintain cooler water in the Yuba River from July through November. While the YRDPM is essentially the same as the model used in previous Yuba

Water FERC-related analyses, several updates were made to enable the model to represent potential water temperature management actions in Yuba Water's CEQA alternatives. Updates to the YRDPM are described below.

4.5.1.1 Englebright Reservoir Variable Water Surface Elevation

Alternative 1 includes a variable Englebright Reservoir water surface elevation during Dry and Critical years. To simulate operations for an increased Englebright Reservoir water surface elevation, a time series for target elevations was added to the YRDPM to replace the static value previously used. Because the model operates the New Colgate Powerhouse to maintain storage at the target elevation, no further action would be needed to trigger increased New Colgate Powerhouse releases for an increased elevation. The YRDPM also includes an Englebright Reservoir water surface elevation trigger, at which point the full Narrows 1 and 2 powerhouse release capacity would be used to return storage to the target elevation. This value was changed from a single value to a time series in the YRDPM update. These two new time series would work in concert to operate the New Colgate and Narrows 1 and 2 powerhouses to maintain water surface elevation in Englebright Reservoir.

For purposes of evaluating the benefits of raising the Englebright Reservoir water surface elevation, a target elevation of 519 feet above mean sea level (ft-msl) was used for November 1 through August 25, and an elevation of 525 ft-msl was used for September 9 through October 15. The water surface elevation would be gradually increased between August 26 and September 8, and gradually decreased between October 16 and October 31. The elevation trigger for maximum Narrows 1 and 2 powerhouse releases was 523 ft-msl from November 1 through August 25, and 526 ft-msl from September 9 through October 15. The trigger elevation increased and decreased during the same times as the target elevations.

4.5.1.2 Increases in Flows in the Yuba River below Englebright Dam

Alternative 1 also includes increased flows below Englebright Dam during Dry and Critical years, based on the Smartsville Index year-type definitions. Yuba Water added logic to allow the user to specify the flow rate and the Smartsville Index trigger for the additional block of water, and the start and end dates for the release.

Alternative 1 includes an additional 175 cfs between September 1 and October 15 when the Smartsville Index indicated the WY type was Dry (Smartsville Index <=1,460 TAF) or drier. The additional flow requirement was added to the Yuba River flow requirement at the Smartsville and Marysville gages.

4.5.1.3 Narrows Project Model Updates

To better describe the "base case" (Existing Condition) for the Narrows Project FERC relicensing (in progress as a separate FERC relicensing) Yuba Water used the newly updated YRDPM. As discussed above, the YRDPM was updated to simulate operation of the YB/DS projects that affect flows on the Middle Yuba River and South Yuba River upstream of the YRDP and to be consistent with models used for the upstream YB/DS relicensing projects. For the Narrows Project relicensing, Yuba Water made three changes to the YRDPM: (1) Yuba Water updated the logic to

reflect the current approach for allocating flows between the Narrows 1 and Narrows 2 powerhouses; (2) Yuba Water added the annual Narrows 1 and 2 Powerhouse outage periods; and (3) Yuba Water updated the approach used to compute Narrows 1 Powerhouse generation to better reflect the results of a 1941 flow test performed by PG&E. The period of record for the YRDPM used for the Narrows Project relicensing includes representative dry, wet, and normal periods, and is consistent with the updated period of simulation used in the YRDP AIR response simulations.

For this DEIR, Yuba Water's current YRDPM simulates YRDP and Narrows Project operations on a daily timestep for a 52-year period of record (WY 1970 through 2021). Additional details about the YRDPM are provided in **Appendix 5A** (Water Operations Model TM), and a full description of the updates to the YRDP hydrology model are provided in Technical Memorandum – Modeling Approach (YCWA 2021),[3] which was submitted to FERC on December 7, 2021 as part of Yuba Water's response to FERC's AIR.

4.5.1.4 Operations to Meet a 55% Unimpaired Flow Requirement on the Middle Yuba River

Alternative 2 includes requirements to provide 55% of the unimpaired flow on the Middle Yuba River at its confluence with the North Yuba River. Under this analysis, NID's releases from the Milton Diversion Dam would be to meet their 4(e) requirements, and the 55% unimpaired flow at the mouth of the Middle Yuba River would be met through a combination of accretions between the Milton Diversion Dam and OHDD, accretions between Our House and Log Cabin Diversion Dams and the confluence of the Middle Yuba and North Yuba rivers, and Lohman Ridge Tunnel closures. Accretions between the Our House and Log Cabin diversion dams and the Middle Yuba River's confluence with the North Yuba River are added to computed unimpaired Middle Yuba River flow above OHDD to determine the total unimpaired Middle Yuba River flow at its confluence with the North Yuba River. Daily accretions below the Our House and Log Cabin Diversion dams are subtracted from 55% of the 21-day average unimpaired flow to compute the release requirement from OHDD, which is used in the model as a flow requirement below the OHDD.

4.5.1.5 Operations to Meet a 55% Unimpaired Flow Requirement on the Yuba River

The unimpaired flow requirement on the South Yuba River would be met through increased releases from Bowman and Spaulding dams and accretions upstream from Jones Bar. Yuba Water used its Upstream Project Model (Mini-Model, described in Chapter 5) to simulate operations of the YB/DS projects to meet a 55% unimpaired flow requirement on a daily basis on the South Yuba River Jones Bar. The division between Bowman and Spaulding Dams is based on their respective portion of unimpaired flows upstream from the dams. The Mini-Model used its standard reservoir storage targets to determine if the 55% unimpaired flow requirement was met from storage withdrawals or reductions in out-of-basin diversions.

[3] Available in FERC's eLibrary at Accession No. 20211207-5175 (Filed on December 7, 2021).

4.5.1.6 Operations to meet a 600 TAF Carryover Storage Requirement in Wet, Above Normal, and Below Normal Years

Alternative 2 includes requirements to provide 55% of the unimpaired flow of the whole Yuba River Watershed at the Marysville Gage, which represents the watershed's mouth at the Feather River. To represent operations to provide 55% of unimpaired flow at the mouth of the Yuba River, the cumulative unimpaired flows on the Middle Yuba and South Yuba rivers are added to the cumulative inflows from the North Yuba River, Oregon Creek, Deer Creek, and accretions to NBB and Englebright reservoirs and along the Yuba River downstream from Englebright Dam to compute the total unimpaired flow at the mouth of the Yuba River. 55% of the 21-day average total unimpaired flow is included as a requirement at the Marysville gage in addition to the FERC FEIS minimum flow. While NBB Reservoir releases were allowed to use the full New Colgate Powerhouse capacity, no increased releases through the NBB spillway or through the NBB low-level outlet to meet the 55% unimpaired flow requirement were included; the SWRCB has stated its intent is not to increase flood releases from storage reservoirs. Furthermore, releases from the spillway would be unreliable since they would only be possible when NBB storage was high enough to reach the spillway sill. In the cases that there was inadequate inflow to and releases from Englebright Reservoir to meet both agricultural water supply deliveries and the 55% unimpaired flow requirement, delivery shortages were allowed to go as high as 99% of the total demand on a daily basis to meet the flow requirement.

4.5.2 YRDP Water Temperature Model

Yuba Water also developed a Temp Model as part of the YRDP FERC relicensing process to simulate reservoir and stream water temperatures resulting from historical meteorology, inflow hydrology, and YRDP O&M for use by Yuba Water and the Relicensing Participants during the relicensing process. The three components of the Temp Model include: (1) Upstream of Englebright Reservoir (i.e., Upper Temp Model); (2) Englebright Reservoir (i.e., Englebright Temp Model); and (3) Downstream from Englebright Dam (i.e., Lower Temp Model). The Temp Model accurately reproduces observed reservoir and stream water temperatures, within acceptable calibration standards over a range of hydrologic and meteorological conditions to serve as a modeling platform and tool to simulate existing and potential future operations (YCWA 2013a).

The Temp Model simulation areas includes: (1) the Middle Yuba River from and including OHDD impoundment to the confluence with the North Yuba River; (2) Oregon Creek from and including the Log Cabin Diversion Dam impoundment to the confluence with the Middle Yuba River; (3) the North Yuba River from and including NBB Dam Reservoir to the confluence with the Middle Yuba River; and (4) the portion of the Yuba River from the confluence of the North and Middle Yuba rivers to the Feather River, including USACE's Englebright Reservoir.

The Temp Model applied in this evaluation is an updated version of the Yuba River Watershed Temp Model developed by YCWA (2017a), which simulates daily water temperatures for a period of record matching that of the updated YRDPM (WY 1970 through 2021). Yuba Water has undertaken extensive efforts to re-calibrate the water temperature model to reflect a greater range of conditions observed since the original calibration (circa 2013) using more recent data. Simulated daily flows and storages output from the YRDPM were used as inputs to the Temp Model. Yuba

Water relicensing Technical Memorandum 2-6 (Temp Model)[4] provides a detailed description of the various modeling platforms used in the development of the Temp Model.

The Temp Model applied in this evaluation is essentially the same one used in previous FERC-related analyses, although some other updates were made to address FERC's 2021 AIR, including: (1) representation of dual-level intakes to Colgate Powerhouse; and (2) updates to the YRDP Upper Project Spreadsheet Model. A full description of the updates to the Temp Model are provided in Technical Memorandum – Modeling Approach (YCWA 2021),[5] which was submitted to FERC on December 7, 2021, as part of Yuba Water's response to FERC's AIR. Additional details about the Temp Model are provided in **Appendix 5B** (Temp Model TM).

4.5.3 Modeled Scenarios and Comparisons

Table 4.5-1 identifies each model scenario developed for evaluation in this DEIR, including abbreviated nomenclature for ease of reference in the model output data, and the basis for development of each scenario.

Table 4.5-1. Model scenario nomenclature.

Scenario Number	CEQA Scenario Name	Abbreviated Name for Modeling Purposes
1	Existing Condition	Existing Condition
2	Future Baseline *	Future Baseline
3	No Project Alternative	No Proj
4	Proposed Projects (existing YB/DS without 4(e) Conditions)	Prop Proj (existing)
5	Proposed Projects (future YB/DS with 4(e) Conditions) *	Prop Proj (future)
6	Alternative 1	Alt 1
7	Alternative 2	Alt 2
8	Cumulative Condition (Proposed Projects)	Cumulative (Prop Proj)
9	Cumulative Condition (Alternative 1) *	Cumulative (Alt 1)
10	Cumulative Condition (Alternative 2) *	Cumulative (Alt 2)

* Includes Yuba-Bear/Drum-Spaulding (YB/DS) FERC 4(e) flow conditions.

4.5.4 Model Applications and Limitations

Although computer-based modeling tools assist in projecting physical, biological, and other factors related to potential impacts on environmental resources for comparative purposes, the modeling tools and analytical methods used in the impact analyses have limitations. Model assumptions and results are generally believed to be more reliable for comparative purposes than for absolute predictions of conditions. Results from a single simulation may not necessarily correspond to actual system operations for a specific month or year, but are representative of general conditions. Model results are best interpreted using various statistical measures such as long-term and year-type average, and probability of exceedance.

Yuba Water has voluntarily chosen to conduct a sensitivity analysis to investigate potential effects of climate change and how such climate change-related effects may potentially influence future YRDP and Narrows Project operations in the Yuba River Watershed under the Proposed Projects and alternatives (see Chapter 25 – Other CEQA Considerations). It should be recognized that potential changed conditions related to anticipated climate change and the future operation of the Proposed Projects in consideration of climate change are also highly uncertain. One source of

[4] Available in FERC's eLibrary at Accession No. 20140429-4062 (Filed on April 29, 2014).
[5] Available in FERC's eLibrary at Accession No. 20211207-5175 (Filed on December 7, 2021).

uncertainty in climate projections is the fact that different climate models may produce different outcomes (Cal-Adapt 2024). Over 30 global climate models have been developed by various climate modeling centers, and they have different ways of representing the climate system. In addition, some aspects of the climate system are less well understood than others, and scientists are constantly working to improve theories about the climate system and its representation in climate models (Cal-Adapt 2024). When sources of uncertainty in climate models are discussed (see Appendix 5E - Yuba River Development Project Model Climate Change Hydrology Report), it is to acknowledge that there could be a range in possible future outcomes. Uncertainties exist in the extent to which the climate will change in the future, the rate of future climate change, and precisely how the changes will affect natural and human systems (Cal-Adapt 2024).

4.5.5 Model Output Results for Environmental Resources

Each model scenario was simulated using hydrologic, hydraulic and water temperature modeling over a 52-year period of record (WY 1970-2021) to evaluate potential flow- and water temperature-related changes under each alternative scenario relative to a basis of comparison. For water-related environmental resources evaluated in this DEIR, Yuba Water utilized post-processed model output results to determine whether, and to what degree, each alternative comparative scenario could result in a potentially significant impact (or benefit), relative to the basis of comparison.

The results of these comparisons are evaluated to describe the potential changes in hydrologic parameters (e.g., instream flows, reservoir elevations, end-of-month reservoir storage, water temperatures) that would be expected to occur in the Project Area under the Proposed Projects and alternatives, relative to the basis of comparison. The evaluations of environmental impacts are made by comparing the differences in model outputs that are calculated in each of these comparisons over the 52-year period of hydrologic record to the impact indicators and significance criteria that were developed for each resource area. These evaluations are presented in the individual resource chapters (Chapters 5-14).

For each comparative scenario, a suite of model outputs at various locations in the Yuba River Watershed are available to support the environmental resource impact evaluations. A high-level summary of modeled flows and water temperatures for the YRDP reaches in all scenario comparisons is provided in **Appendix 4B** (Summary of Changes in Modeled Riverine Flows and Water Temperatures). More detailed scenario-specific model output results are presented in **Appendix 4C** (Flow and Water Temperature Data Products) and were used to inform the scope of the resource-specific analyses.

Although this DEIR does not present detailed, quantitative analyses of resource-specific impacts for the No Project Alternative compared to the Existing Condition (showing no changes), the model output results are presented in Appendix 4B for disclosure purposes.

4.6 Overview of the Types of Potential Impacts Considered

In the analysis conducted for this DEIR, mechanisms that could cause potential impacts are discussed for each environmental resource. General categories of impact mechanisms are construction, and O&M. Project-related impacts are categorized as follows and as appropriate, to

describe the intensity or duration of the impact:

- A temporary or short-term impact would generally occur only during project construction. Construction impacts would occur during the defined construction period (which would vary by facility and in some cases could extend several years) and include all activities that would occur to construct each project facility. Construction disturbance areas include the project facility footprint plus the land area around that footprint that would be used for materials laydown, soil stockpiling, equipment storage, construction vehicle parking, equipment/vehicle maintenance, spoil disposal, construction debris, batch plants, materials delivery, access roads, actual construction activity disturbance, and any other activity conducted during the construction period for a project purpose that would cease after the project facilities are built.
- A long-term or permanent impact would occur after the completion of project construction. In some cases, a long-term impact could be a permanent impact. Project O&M impacts include activities that must occur to operate and maintain each project facility. These activities and their associated impacts are long-term and permanent. Operation activities include those related to the movement of water (such as reservoir level fluctuations, or the intake or release of water), the generation/transmission of electricity, the use of roads during O&M activities, and the recreation activities that would be associated with operation of the project.
- A ***direct impact*** is an impact that would be caused by an action and would occur at the same time and place as the action.
- An ***indirect impact*** is an impact that would be caused by an action but would occur later in time or farther removed in distance, but are still reasonably foreseeable.

4.7 Assessment of Impacts

For the purposes of the analyses conducted in this DEIR, a combination of the CEQA Appendix G Environmental Checklist Form criteria are used, along with professional judgment that considers current regulations, standards, knowledge of the area, and the context and intensity of the environmental effects. The specific criteria for determining impacts will be listed in each resource chapter and used to develop one consistent impact conclusion by impact type.

For the environmental resource discussions presented in Chapters 5 through 24, separate impact statements are presented for the YRDP Relicensing Project and the Narrows Relicensing Project. Each identified impact statement has been formatted to include reference to the environmental resource and the scenario (or alternative) being evaluated. Table 4.7-1 presents an example of the naming convention format being used in the impact statements, using fisheries resources as an example. Included in each impact discussion is the reasoning indicating whether and why there would be an impact and the level of significance of each impact, when compared to the relevant bases of comparison.

Table 4.7-1. Example of Impact Statement Naming Conventions.

Environmental Resource Area	Impact Statement Numbering*
Fisheries Resources	YRDP Impact FISH-PP-#:
	Narrows Impact FISH-PP-#:
	YRDP Impact FISH-Alt1-#:
	Narrows Impact FISH-Alt1-#:
	YRDP Impact FISH-Alt2-#:
	Narrows Impact FISH-Alt2-#:

* Each resource impact is numbered, with the first impact numbered "1."

The level of significance of potential impacts described in the DEIR may be classified based on the following impact definitions:

- ***Beneficial Impact***: A beneficial impact would result in an improvement to the environment regardless of the threshold of significance. No mitigation is required.
- ***No Impact***: No change in the environment would result from implementing the Proposed Projects or an alternative. No mitigation is required.
- ***Less Than Significant Impact***: A less than significant impact would cause no substantial adverse change in the environment from implementing the Proposed Projects or an alternative. No mitigation is required.
- ***Less Than Significant with Mitigation Incorporated***: A potentially significant impact that is reduced to a less than significant impact with mitigation incorporated, which would cause no substantial adverse change in the environment from implementing the Proposed Projects or an alternative.
- ***Potentially Significant Impact***: A potentially significant impact may cause a substantial adverse change in the environment based on the evaluation of project effects using significance criteria specific to each resource. However, additional information is needed regarding the extent of the impact. A potentially significant impact is treated as a significant impact unless additional information indicates that the impact will not be significant. Mitigation measures are proposed, when feasible, to reduce potential impacts on the environment.
- ***Significant Impact***: A significant impact would cause a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects using significant criteria specific to each resource. Mitigation measures and/or Project Alternatives are identified to reduce project effects to the environment.
- ***Significant Unavoidable Impact***: A significant unavoidable impact would result in a substantial change in the environment that cannot be avoided or mitigated to a less than significant level if the project is implemented.

4.8 Analysis Level of Detail

According to CEQA Guidelines Section 15151, "[a]*n EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental impacts. An evaluation of the environmental effects of a project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible*." CEQA Guidelines Section 15204 explains that

what is "reasonably feasible" inevitably varies from project to project, based on factors such as (1) the magnitude of the project at issue; (2) the severity of potential environmental impacts; and (3) the geographic scope of the project. Thus, for complex projects such as the YRDP and Narrows Project, what is reasonably feasible is different than what could be reasonably accomplished for smaller projects with relatively simple analysis. The degree of specificity required in an EIR depends on the type of project being analyzed (CEQA Guidelines § 15146). Project elements are analyzed at a degree of specificity that corresponds to the degree of specificity involved in the underlying activity that is described in the DEIR (CEQA Guidelines § 15146).

The analysis of potential construction-related impacts on environmental resources focuses on areas upstream of Englebright Dam because: (1) construction activities associated with the YRDP Relicensing Project are limited to areas upstream of Englebright Reservoir and would not occur along the lower Yuba River; and (2) no construction activities are proposed for the Narrows Project relicensing (see Chapter 2 - Project Description, Section 2.7.2, "Proposed Narrows Project under New License"). Because no new facilities are proposed for the Narrows Project, there would be no construction impacts on environmental resources related to this project.

4.8.1 YRDP Construction Schedules

As described in Chapter 2, YCWA's (2017a) AFLA proposes seven general changes to existing YRDP facilities, including: (1) modification to the OHDD fish release outlet; (2) modification to the Log Cabin Diversion Dam fish release outlet; (3) modification to the Lohman Ridge Diversion Tunnel Intake; (4) modifications to recreation facilities at NBB Reservoir; (5) addition of a TDS at New Colgate Powerhouse; (6) addition of a new auxiliary flood control outlet (aka ARC Spillway)[6] at NBB Reservoir; and (7) modifications to YRDP roads.

Chapter 2 summarizes the YRDP proposed construction activities and provides general information about the proposed schedule for construction of key facilities to provide an understanding of the estimated overall 1- to 20-year[7] facility construction period. Exhibit C of YCWA's 2017 AFLA (see Appendix 2A of this DEIR) describes Yuba Water's construction methods and schedule for the above changes, with the exception of recreation facilities and roads. The construction schedules (including sequencing and duration) for recreation facilities and for roads are described in Yuba Water's proposed Condition RR1 (Implement Recreation Facilities Plan) and proposed Condition LU1 (Implement Transportation System Management Plan), which are included in Appendix 2B of this DEIR. Where available and appropriate, resource impact analyses use the detailed construction schedule and sequencing information available to estimate potential impacts (e.g., air quality).

Recreation-related construction activities are scheduled to extend over the duration of the new FERC license, and the implementation schedule for the major rehabilitation and improvements at

[6] For CEQA compliance purposes, Yuba Water's proposed ARC Spillway is a separate project with independent utility that was fully analyzed in a separate environmental review process, which included the preparation of a DEIR (Yuba Water 2023b) and Final EIR (Yuba Water 2024). For completeness, the ARC Spillway is included in the YRDP Proposed Project because: (1) it was included as part of Yuba Water's proposed (2017a) AFLA; (2) it was included as part of the FERC Staff Alternative that was evaluated in FERC's (2019) FEIS; and (3) the ARC Spillway facilities and operations will be included as part of the new license for the YRDP that is issued by FERC. Where appropriate, the resource-specific analyses of the ARC Spillway presented in Yuba Water's (2023b; 2024) EIR is incorporated by reference into this DEIR.

[7] Most construction work would not begin the first full calendar year (i.e., "Year 1") of the new FERC license.

each existing recreation facility (covering new License Years 1 through 20) is described in proposed Condition RR1 (Implement Recreation Facilities Plan) (see Appendix 2B). The implementation schedule for new recreation facilities (i.e., improvements) also is described in the Recreation Plan. As shown in the implementation schedule, construction work at individual recreation facilities is generally planned to be conducted in phases (e.g., License Year 1, License Years 6-10, License Years 10-15, etc.). The majority of work on National Forest System (NFS) lands will occur within the first eleven years of the new license, with some work on Yuba Water facilities occurring during License Years 14 through 20. After Year 20, the need for replacement and/or redevelopment of facilities will be discussed and determined at annual coordination meetings with the USFS, as described in the Recreation Facilities Plan (YCWA 2022a).

Yuba Water's Transportation System Management Plan includes two components with regards to timing of road maintenance activities: (1) short-term maintenance;[8] and (2) long-term maintenance.[9] Long-term road repairs have historically occurred on average about every 7-10 years and are undertaken in addition to the short-term (annual) road maintenance. Specific rehabilitation actions (including stabilizing and revegetating areas affected by road-related drainage or erosion) for YRDP roads are summarized in Attachment A of the Transportation System Management Plan (see Appendix 2B of this DEIR). Additional rehabilitation detail and a timeframe for implementation are provided in Attachment F of the Transportation System Management Plan for specific primary project roads and recreation road features (e.g., culverts, erosion sites, landslide sites, pavement, safety and signs).

When resource impacts are isolated at specific construction sites, the duration and phasing for construction of that facility is generally identified in the Recreation Plan and/or the Transportation System Management Plan for use in estimating the potential impact durations. This information is intended to accurately characterize the impact at a construction location and to help readers understand the temporal extent of an impact at a proposed facility or construction site.

4.8.2 Maintenance-related Activities

Maintenance-related activities pertaining to the Proposed Projects and alternatives would be expected to be relatively standard (e.g., equipment inspections, assessing structural integrity of facilities, testing functionality of facility gates, valves and intakes, etc.) or similar in nature to the types of activities (e.g., cleaning, making minor repairs, vegetation management, hazard tree removal, etc.) that could be conducted as part of YRDP construction, but to a lesser extent (i.e., lower frequency and smaller magnitude). Potential impacts related to maintenance activities (if any) are addressed on a resource-by-resource basis depending upon whether the potential exists for maintenance-related activities to affect a particular environmental resource. Impact statements associated with maintenance-related activities are only included in resource chapters where activities have the potential to affect that particular resource.

[8] Short-term road maintenance is defined as routine annual maintenance for localized and seasonal repairs to address normal wear and tear during road use under typical annual weather conditions.

[9] Long-term maintenance is defined as repairs that are scheduled around specific events that impact the overall integrity of a given road, such as heavy-haul events or unusually heavy storm events – events that typically require road repairs that are beyond the scope and budget of the annual (short-term) road maintenance procedures.

4.8.3 Concurrent Project Effects

The impact analyses presented in this DEIR have been designed to address the whole of both the YRDP and Narrows Project FERC Relicensings (and Alternatives 1 & 2), and YRDP construction-related activities are evaluated for each resource topic in a synthesized manner. Because of the large scale of the YRDP's proposed activities, project construction activities are expected to occur at multiple YRDP facility sites simultaneously, as well as during various phases of project implementation over the period of a new FERC license. The collective environmental impacts on each resource are considered and evaluated to describe the aggregated effect on certain resources (e.g., fisheries, cultural resources) over time. For other resource topics, such as air quality and transportation, assumptions were made regarding a comprehensive project schedule with estimates

of construction vehicle and equipment use was used to estimate the peak effects on these resources when multiple construction sites (and phases of implementation) are expected to occur.

4.8.4 Environmental Commitments and Mitigation Measure Development

The CEQA Guidelines instruct lead agencies to "*distinguish between the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons*" in their EIRs (CEQA Guidelines 29 § 15126.4(a)(1)(A)).

As used in this DEIR, there are many environmental commitments[10], including best BMPs[11] and PM&Es that have been identified through the FERC relicensing process, including FERC-approved implementation plans that are already incorporated into the project design and construction, either as a result of: (1) Yuba Water's proposal described in the 2017 AFLA for the YRDP; (2) FERC's (2019) analysis of the FERC Staff Alternative in the FEIS for the YRDP; or (3) USFS's 2022 Revised Final Section 4(e) Conditions for the YRDP (see Chapter 2 – Project Description). For the YRDP relicensing, Yuba Water has committed that PM&Es and BMPs would be incorporated into the Mitigation Monitoring and Reporting Plan (MMRP) and implemented if Yuba Water accepts a new FERC license for the YRDP as described in this DEIR. For the Narrows Project, no PM&Es or BMPs have been identified through the FERC relicensing process to date.

In addition to the environmental commitments (e.g., BMPs, PM&Es) that have been identified through the FERC relicensing process and are part of the Proposed Projects, if new significant impacts are identified as a result of the resource-specific CEQA analysis conducted for this DEIR, then additional mitigation measures may be identified to minimize or avoid those potentially significant impacts. If "potentially significant" impacts are identified, mitigation measures will be formulated to eliminate or reduce the intensity of the impacts and focus on the protection of sensitive resources to the extent feasible. If a mitigation measure would cause one or more significant impacts in addition to those that would be caused by the Proposed Projects, the impact(s) of the mitigation measure also is discussed but, in less detail, than the significant impacts

[10] Environmental commitments, including PM&Es, are intended to anticipate and possibly avoid or minimize environmental impacts.

[11] BMPs are well-established, generally applicable practices or requirements that are incorporated into a project's engineering, design, and construction process.

of the Proposed Projects. Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance.

Under CEQA, the effectiveness of a mitigation measure will be determined by evaluating the impact remaining after the application of the mitigation, and reaching one of two conclusions, including: (1) the mitigation reduced the impact to a less-than-significant level; or (2) no feasible mitigation exists to reduce the impact to a "less-than-significant level" and, therefore, the impact is determined to be "significant and unavoidable." No mitigation measures are needed or proposed when an impact is determined to be "less than significant." To aid readers of this DEIR, each mitigation measure is identified numerically to correspond with the number of the impact being mitigated by the measure. The mitigation measures (if any) proposed in this DEIR are identified within each resource chapter (Chapters 5 through 25). If new mitigation measures are identified, such measures will be incorporated into the MMRPs, as appropriate, for the YRDP and the Narrows Project, respectively, and implemented if the projects are approved.

4.8.5 Reliance on Other Available Sources of Information

For the YRDP, the extensive FERC relicensing process that has been conducted over the past decade has resulted in the development of many studies, analyses and reports that may provide relevant and useful information to help inform the content of this DEIR. Some of the key sources of information include:

- YCWA's (2010) PAD for the YRDP.
- YCWA's (2013b) DLA for the YRDP.
- YCWA's (2014) FLA for the YRDP.
- YCWA's (2017a) AFLA for the YRDP.
- YCWA's (2017b) Response to FERC's Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, REA, and Soliciting Comments, Recommendation, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions.
- FERC's (2018) DEIS for the YRDP.
- FERC's (2019) Final EIS for the YRDP.
- YCWA's (2022b) FERC Filings in Response to FERC's March 8, 2021 AIR.
- YCWA's (2023a) DEIR for the ARC Spillway Project.

For the Narrows Project, although the FERC relicensing process has been initiated more recently, previously developed information also is available to help inform the content of this DEIR, including:

- YCWA's (2021) PAD for the Narrows Project.
- YCWA's (2023) DLA for the Narrows Project.

- YCWA's (2023b) FLA for the Narrows Project.
- FERC's (2024a) Scoping Document 1 for the Narrows Project.

Where appropriate, and in accordance with CEQA Guidelines §15150, some sections (e.g., environmental setting) of this DEIR have incorporated by reference portions of the documents listed above. Incorporation by reference is generally "*most appropriate for including long, descriptive, or technical materials that provide general background but do not contribute directly to the analysis of the problem at hand*" (CEQA Guidelines, § 15150, subd. (f)). All of the documents listed above are publicly available on FERC's eLibrary website (https://www.ferc.gov/ferc-online/elibrary). Documents that have been filed with FERC and are cited in FERC's eLibrary that have either been incorporated by reference or are simply cited in this DEIR are included as part of Yuba Water's administrative record for the Proposed Projects.

4.9 Introduction to the Cumulative Analysis

This DEIR provides an analysis of cumulative impacts of the Proposed Projects taken together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the State CEQA Guidelines. The goal of such an exercise is twofold: first, to determine whether the overall long-term impacts of all such projects would be cumulatively significant; and second, to determine whether the incremental contribution to any such cumulatively significant impacts by the project would be "cumulatively considerable" (and thus significant). (See State CEQA Guidelines Sections 15130[a]–[b], Section 15355[b], Section 15064[h], and Section 15065[c]; and *Communities for a Better Environment v. California Resources Agency* (2002)103 Cal. App. 4th 98, 120.) In other words, the required analysis intends first to create a broad context in which to assess cumulative impacts, viewed on a geographic scale beyond the project site itself, and then to determine whether the project's incremental contribution to any significant cumulative impacts from all projects is itself significant (i.e., "cumulatively considerable").

Cumulative impacts are defined in State CEQA Guidelines Section 15355 as "*two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts*." A cumulative impact occurs from "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (State CEQA Guidelines Section 15355[b]).

Consistent with State CEQA Guidelines Section 15130, the discussion of cumulative impacts in this DEIR focuses on significant and potentially significant cumulative impacts. Section 15130(b) of the State CEQA Guidelines provides, in part, the following:

> [t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on

the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

The DEIR analyzes potentially significant impacts that could result from the Proposed Projects and alternatives, in combination with related past, present, and future projects. The Proposed Projects and alternatives would have a significant impact if: (1) a significant cumulative impact exists or would occur, and (2) the incremental contribution of the Proposed Projects or alternatives to such an impact would be cumulatively considerable. Because the YRDP and the Narrows Project are distinct FERC hydropower projects, separate analyses of potential cumulative impacts related to the YRDP and related to the Narrows Project are presented in the DEIR. If potentially significant impacts are identified for the YRDP, the cumulative analysis will evaluate whether the incremental contribution of any such cumulatively significant impacts of the YRDP would be "cumulatively considerable" (and thus significant). Similarly, if potentially significant impacts are identified for the Narrows Project, the cumulative analysis will evaluate whether the incremental contribution of any such cumulatively significant impacts of the Narrows Project would be "cumulatively considerable" (and thus significant).

4.9.1 Cumulative Context and Approach

4.9.1.1 Geographic Scope

For most environmental resources, the geographic area that could be affected by the Proposed Projects (or an alternative) and is appropriate for a cumulative impact analysis includes the Yuba River Watershed and the streams, water bodies, groundwater basins, and facilities that could be affected by changes in Yuba River outflow to the Feather River. These areas potentially include:

- NBB Reservoir.
- NBB Dam Reach, including the North Yuba River and the Yuba River downstream of NBB Dam to the confluence of the North Yuba River with the Middle Yuba River.
- OHDD Impoundment on the Middle Yuba River.
- Middle Yuba River from Jackson Meadows Reservoir downstream to the Milton Diversion Dam and OHDD Impoundments.[12]
- Middle Yuba River (i.e., OHDD Reach) from OHDD to the confluence with the North Yuba River.
- Oregon Creek (Log Cabin Diversion Dam Reach) downstream to the confluence with the Middle Yuba River.
- Fordyce Lake.
- Fordyce Creek below Fordyce Lake Dam to Lake Spaulding.
- South Yuba River from upstream reservoirs (e.g., Bowman Lake, Lake Spaulding) downstream to Englebright Reservoir, including tributaries (e.g., Canyon Creek).[13]

[12] With respect to potential indirect cumulative impacts only.
[13] With respect to potential indirect cumulative impacts only.

- Englebright Reservoir.
- Lower Yuba River to the confluence with the Feather River.
- Yuba Subbasins of the Sacramento Valley Groundwater Basin.

For the reasons described above in Section 4.3.1.3 (Downstream Extent of the Project Area), the geographic extent considered for the cumulative analyses conducted for certain water-related resources (i.e., surface water resources, water quality and fisheries) extends downstream of the lower Yuba River and includes the lower Feather River, the lower Sacramento River and the Delta. As discussed in Section 4.3.1.3, it would be speculative to make operational assumptions about how the SWRCB's Draft Bay-Delta Plan Update "regulatory pathway" could be implemented by the various involved entities throughout the Sacramento Valley (e.g., Feather River, Sacramento River, Delta) for modeling purposes. Attempts to characterize such assumptions for modeling purposes also would be speculative in consideration of ongoing uncertainties and the evolving status of the SWRCB Draft Bay-Delta Plan Update "regulatory pathway" as demonstrated by the suite of public comments (e.g., DSR (SWRCB 2023), 2024 public workshops, 2025 working meetings, etc.) that have been provided to the SWRCB.

The approach taken for characterizing the geographic extent of the cumulative impact analysis in this DEIR is also consistent with the approach taken by FERC. FERC (2019; 2024b) defined the geographic scope of analysis for cumulatively affected resources by the physical limits or boundaries of: (1) the FERC proposed action's effect on the resources, and (2) contributing effects from other hydropower and non-hydropower activities. For both the YRDP and the Narrows Project, FERC (2019; 2024b) determined that the cumulative geographic scope for most resources extended downstream to the mixing zone of the Yuba River and the Feather River. However, for the YRDP, FERC (2019) extended the cumulative geographic scope for anadromous fish downstream to the confluence with the Feather River, the lower Feather River to the lower Sacramento River, and through the Sacramento-San Joaquin Delta to the San Francisco Bay. For the Narrows Project, FERC (2024b) extended the geographic scope for water and aquatic resources downstream through the lower Yuba River watershed to the confluence with the Feather River, the lower Feather River, the lower Sacramento River, and through the Sacramento-San Joaquin Delta to the San Francisco Bay.

For the reasons above, the cumulative analyses for certain water-related resources (i.e., surface water resources, water quality and fisheries) in this DEIR includes consideration of potential changed conditions that may occur in areas (e.g., the lower Feather River, lower Sacramento River and Delta) downstream of the lower Yuba River, and these potential cumulative impact considerations are addressed in a qualitative manner.

4.9.1.2 Related Projects

Section 15130(b)(1) of the State CEQA Guidelines identifies two approaches to analyzing cumulative impacts. The first is a summary approach (also known as the "plan" approach), wherein the relevant projections, as contained in an adopted planning document that evaluates regional or area-wide conditions, are summarized. The second is the "list" approach, by which a defined set of past, present, and reasonably anticipated future projects producing related or cumulative impacts is considered for analysis.

The cumulative analysis in this DEIR uses the "list" approach. The list of projects for the cumulative impact analysis was developed by first identifying projects proposed by Yuba Water and others at NBB Dam and Reservoir, within the Yuba River Watershed, and along the North Yuba River, the Middle Yuba River, the South Yuba River and the Yuba River downstream of NBB Dam to the confluence of the Lower Yuba River with the Feather River.

Table 4.9-1 shows known past, present, and reasonably foreseeable future projects that may affect similar environmental resources as the Proposed Projects, the impacts of which may combine with impacts from the Proposed Projects to cause cumulative impacts. The table is organized by geographic region and includes the name of the project, the project status (i.e., past, present, or future), lead agency(ies), and summary descriptions of the scope of the project. The projects listed in Table 4.9-1 serve as the foundational information for conducting the cumulative impact assessments for the resources addressed in the DEIR.

Not all of the projects included in Table 4.9-1 are considered for the cumulative assessment of each resource topic analyzed in the DEIR. For each resource topic, the geographic and temporal context for cumulative analysis was considered, and the list of projects in Table 4.9-1 was screened against these contexts to identify only those projects that have the potential to combine with impacts from the Proposed Projects (or an alternative) to cause a cumulative impact.

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Table 4.9-1. Cumulative Project List.

Project	Status	Primary Agencies	Description
Upper Yuba River Watershed			
North Yuba Forest Partnership	In Progress	YCWA, USFS, SYRCL, The Nature Conservancy (TNC), Camptonville Community Partnership, The Nisenan, National Forest Foundation, Sierra County, Blue Forest	This is a partnership effort of nine agencies, including YCWA, working together to implement forest restoration across 275,000 acres through ecological thinning and prescribed fire. Treatment areas have been identified including north and east of NBB Reservoir. No treatment areas are located at the project site or immediate vicinity.
Yuba Foothills Healthy Forest Project	In Progress	YCWA, USFS, Yuba Watershed Protection and Fire Safe Council, private timber companies and landowners	The project supports significant biomass removal treatments on 5,375 acres in the Yuba County foothills, all of which are adjacent to communities with limited resources for fire risk reduction efforts, including Oregon House, Dobbins, Brownsville, Challenge and Rackerby. Treatment activities include wildland-urban interface fuel reduction/break, ecological restoration treatments, prescribed burning, mechanical/manual treatments, and herbicide use. These treatments will improve forest health and reduce the risk of a catastrophic wildfire within a "Project Impact Zone" that spans more than 71,000 acres and includes an estimated 2,721 structures. CEQA environmental compliance was completed by Yuba County in 2020. Project implementation began in 2020 and completion is expected in 2024.
Upper Yuba Headwaters Forest Restoration Project	In Progress	Sierra Nevada Conservancy (SNC), NID	The project serves to reduce fire risk in the Middle and South Yuba watersheds near Jackson Meadows Reservoir by mechanically treating approximately 400 acres of hazardous-fire fuels adjacent to a critical water storage reservoir and associated infrastructure, which will complement other NID restoration and enhancement projects. The region has been prioritized for fire fuels reduction and hazard-tree removal. Activities will be a combination of hazard tree removal, mastication, and hand crew understory thinning. The project aims to reduce fire risk, support water quality, and enhance forest health with factors such as reduced resource composition, enhanced carbon sequestration, increased hydrologic activity, and increased resilience to pests and climatic disturbances. Project implementation is to occur between July and November over a 4-year period (2023-2027). NID proposes to implement treatments at a rate of 100 acres per year.
Inimim Forest Restoration Project	Phases 1 & 2 completed; Phase 3 In Progress	Yuba Watershed Institute (YWI), SNC, CalFire, BLM	The project purpose is to increase forest ecosystem resilience to forest disturbances anticipated to occur over the next 100 years. The project aims to help restore the 'Inimim Forest to an old-growth condition, manage its timber based on ecologically sustainable yields, protect its wildlife, and protect its cultural, historical, recreational, educational, and scenic values. Vegetation management activities involved three phases. Phases 1 and 2 involved treatments of hazard tree removal, hand-thinning, mastication and prescribed burning of over 850 acres. Phase 3 (initiated in 2023) included mastication, biomass harvest, and hand thinning treatments on about 279 additional acres.
Yuba Roadside Fuel Treatment Project	In Progress / Reasonably Foreseeable	Yuba Watershed Protection and Fire Safe Council, YCWA	The project serves to reduce fire fuels and fire risk along 555 miles of County Service Area roads and private roads in the Yuba Foothills. Mechanical and manual treatments, herbicide applications, and pile burning will be utilized to create shaded fuel breaks within a 150-foot buffer on each side of County roads and a 30-foot buffer on each side of CSA and private roads. Protections for wildlife, rare plants, watercourses, water quality, and soils will be implemented. Fuel reduction efforts began during spring 2023, with additional treatments planned in the fall and winter of 2023 and 2024. Retreatment would be dependent on regrowth conditions and would differ by location. However, retreatment is anticipated to occur between five and 10 years.
Camptonville Biomass Plant	Reasonably Foreseeable	Camptonville Community Partnership, YCWA	A 5 megawatt conventional direct combustion, forest biomass to renewable energy project, located in Camptonville. The proposed plant will have the capacity to process 40,000 bone dry tons of woody material per year. This project will provide a means to dispose of excess forest biomass, reduce fire hazard, revitalize Camptonville's former sawmill site and boost the local economy, reduce regional air emissions from open pile burning, promote forest health in and around Camptonville and neighboring communities, maintain the region's water quality, quantity and reliability for local and downstream users, and produce renewable energy.
Yuba-Bear Hydroelectric Project (Yuba-Bear Project) FERC Project No. 2266 Relicensing, Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310), Lower Drum Hydroelectric Project (FERC No. 14531), and Deer Creek Hydroelectric Project (FERC Project No. 14530) Relicensing	Reasonably Foreseeable	FERC, NID, PG&E	NID is applying for a new license for the Yuba-Bear Project (FERC Project No. 2266), and PG&E is applying for the Drum-Spaulding Project (FERC Project Nos. 2310 and 14531). The Yuba-Bear Project is located on the Middle and South Yuba rivers, Bear River, and Jackson and Canyon creeks. Concurrently, PG&E is applying for a license renewal for the Drum-Spaulding Project. The Upper Drum-Spaulding Project is located in Nevada and Placer counties, and consists of 24 dams and reservoirs, 7 powerhouses, 4 overhead transmission lines, 1 diversion dam, and various water conduits, recreation facilities, and other associated facilities and structures. The Upper Drum-Spaulding Hydroelectric Project's dams are located on the South Yuba River, Bear River, Fordyce Creek, North Fork of the North Fork American River, and associated tributaries. The Lower Drum Project facilities are in Placer County and consist of 5 dams and reservoirs, 4 powerhouses, and various water conduits, recreation facilities, and other associated facilities and structures. The Lower Drum Project dams are located on the Bear River, Dry Creek, Rock Creek, Auburn Ravine, Mormon Ravine, and associated tributaries. PG&E closely coordinates the operations of the Drum-Spaulding Project with NID's Yuba-Bear Project. The proposed 5.7-MW Deer Creek Project would include the existing Deer Creek development with the exception of the upper 1.57 miles of the South Yuba Canal, which would be part of the Upper Drum-Spaulding Project. The two projects overlap in part in the Yuba River and Bear River basins, and many of the facilities are hydraulically interconnected, including facilities that are used to meet water supply demands in Nevada and Placer counties. The FERC relicensing processes for these projects is underway. Final WQC for PG&E's Upper Drum-Spaulding and Lower Drum Projects were issued by SWRCB in 2021. NID and PG&E are awaiting the FERC license renewal.
Lower Yuba River			
Yuba River Resilience Initiative	Reasonably Foreseeable	YCWA, CDFW, NMFS	In May 2023, YCWA, CDFW, and NMFS signed a term sheet to partner on an extension program to implement habitat restoration measures on the lower Yuba River and the North Yuba River. The Term Sheet sets forth a framework for a Settlement Agreement to implement certain restoration measures, including the potential for construction of a new fishway and modernized water diversion at Daguerre Point and initiation of a comprehensive program to reintroduce spring-run Chinook salmon to the North Yuba River. At the time this Final EIR was prepared, negotiations for implementation of the Term Sheet have been progressing and the parties involved are seeking to resolve the remaining issues, complete CEQA review as discussed below, and execute the agreement by the end of 2024. YCWA anticipates relying on the SWRCB's General Order for Clean Water Act Section 401 WQC and Waste Discharge Requirements for Restoration Projects Statewide (SRGO), which provides a programmatic authorization for qualifying restoration projects, for construction, operation, and maintenance of the Nature-Like Fishway component of the Restoration Plan. YCWA evaluated the project's consistency with the SRGO and the SWRCB's 2022 Program EIR (PEIR) (State Clearinghouse No. 2019100230) for the SRGO to determine the appropriate CEQA document for the project. In February 2025, Yuba Agency adopted a CEQA analysis memorandum and determined that the project is within the scope of the SWRCB's SRGO PEIR. The memorandum also serves as an addendum (YCWA 2025). YCWA also authorized execution of the Yuba River Resilience Initiative Agreement, which includes the Lower Yuba River at Daguerre Point Nature-Like Fishway as a component in February 2025.
Lower Yuba River Accord Water Transfer Program Extension	In Progress	YCWA	In 2008, YCWA implemented the Lower Yuba River Accord (Yuba Accord), which is a comprehensive settlement resolving issues related to instream flow requirements for the lower Yuba River, water transfers, conjunctive use of surface water and groundwater, and fisheries management. The Yuba Accord involves three sets of related agreements: (1) fisheries agreement between YCWA, CDFW and certain non-governmental organizations; (2) conjunctive use agreements between YCWA, Member Units, and local water and irrigation districts and companies; and (3) water purchase agreement between YCWA and DWR. The Yuba Accord was implemented through a SWRCB WR order (Corrected Order WR 2008-0014). YCWA prepared and certified a Final EIR for the Yuba Accord in 2007. The fisheries agreement established new minimum instream flow requirements during specified periods of the year and a monitoring and evaluation program for the fisheries resources in the lower Yuba River. The conjunctive use agreements enable the Member Units to participate in the Yuba Accord Groundwater Substitution Water Transfer Program. Under this program, the member districts pump groundwater as a substitute supply for YCWA surface water deliveries during certain dry years, which allows surface water to remain in the lower Yuba River during those years. The water purchase agreement allows YCWA to sell and transfer to DWR and others the water that is being released by YCWA for instream flows and water made available through groundwater substitutions by the Member Units, in accordance with agreed-upon accounting principles. The Yuba Accord water purchase agreement, conjunctive use agreements, and long-term water transfer authorization in SWRCB Corrected Order WR 2008-0014 expire on December 31, 2025. YCWA plans to extend the Yuba Accord water transfer program before this expiration date. Extension of the Yuba Accord water transfer program will involve three principal components: (1) a new or extended DWR water purchase agreement; (2) new or extended conjunctive use agreements; and (3) a SWRCB water right change petition and SWRCB approval. YCWA has approved a Yuba Accord water transfer program extension without significant substantive changes. The Proposed Extension would not result in any changes to reservoir storage levels (e.g., NBB Reservoir, Englebright Reservoir) or to flow releases into the lower Yuba River, relative to the range of operations that may occur under CEQA baseline (i.e., existing conditions). On January 12, 2023, YCWA released its NOP of a Draft SEIR and Notice of Scoping Meetings for Extension of the Lower Yuba River Accord Water Transfer Program. On April 5, 2024, YCWA issued the Draft SEIR, which had a 45-day public review and comment period that closed on May 20, 2024. On May 29, 2024, YCWA filed the water right petition to the SWRCB, which is currently considering that petition. YCWA completed and certified the Final SEIR in September 2024.

Table 4.9-1. (Continued).

Project	Status	Primary Agencies	Description
Lower Yuba River (cont.)			
ARC Spillway Project	Reasonably Foreseeable	YCWA	YCWA proposes to construct, operate, and maintain a second spillway (i.e., the ARC Spillway) at NBB Dam. Releases from the ARC Spillway would be made in anticipation of large storms to provide increased evacuated storage capacity in New Bullard's Bar Reservoir prior to and during high-precipitation events and large storm peak inflows to reduce the peak outflow. The ARC Spillway Project would be operated conjunctively with the existing Primary Spillway at the dam and New Colgate Powerhouse to meet NBDD overall target releases and to efficiently release flows downstream, including earlier passage of flows during large storm events. The existing concrete dam and Primary Spillway would not be altered by the ARC Spillway Project. Flood control in the Yuba River is mainly provided by 170,000 AF of seasonally dedicated storage in NBB Reservoir. YCWA provides overall reservoir operations although USACE flood management operations are directed through its 1959 Master Manual of Reservoir Regulation, Sacramento River Basin, California, and, specifically, by the NBB Reservoir Water Control Manual (WCM) (USACE 1972). Operational flood rules dictate the amount of variable flood space made available seasonally. No flood space is required from June 1 to September 15. During the peak flood season (November 1 – March 31), the flood control space is a USACE-mandated 170,000 AF. The primary benefit of the ARC Spillway Project is operational flexibility for managing outflow at the dam, significantly reducing flood risk downstream at Marysville and the Feather-Yuba River confluence and providing public safety benefits. Because the ARC Spillway would provide significant public benefits and because of the uncertainty regarding when the new license for the YRDP Relicensing Project will be issued, YCWA proposes to add the new ARC Spillway under the existing FERC license rather than wait until the new FERC license is issued. As discussed in Chapter 2, because the schedule of events planned has not occurred as expected, YCWA determined that it was necessary for the ARC Spillway Project to proceed ahead of FERC relicensing for the YRDP. Once constructed, the ARC Spillway and its related flood control operations will be a new operational component of the new FERC license that has not historically been part of the YRDP and is not part of the existing FERC license (unless FERC decides to issue an amendment order adding the ARC Spillway to the existing license in response to YCWA's 2025 application for a non-capacity amendment, which could occur sooner than waiting until the new FERC license for the YRDP Relicensing is issued). However, because the ARC Spillway ultimately will be part of the YRDP, project construction and operation of the ARC Spillway also requires FERC approval. YCWA undertook a separate process of complying with CEQA for the ARC Spillway Project. YCWA released a DEIR for the ARC Spillway Project for a 60-day public review period that closed on August 20, 2023. YCWA then issued the Final EIR (YCWA 2024) and approved the project in December 2024. In January 2025, YCWA filed a Final Non-Capacity License Amendment for the ARC Spillway with FERC. YCWA's (2023a) analysis of the ARC Spillway determined that the addition of the ARC Spillway to the YRDP would have no effect on flow requirements in the existing FERC license, nor would it have any effect on the flow requirements that are anticipated to be in the new license (YCWA 2023a). It is anticipated that construction of the ARC Spillway would occur in advance of other YRDP relicensing-related construction activities that would not be initiated until after FERC issues a new license. Thus, it is unlikely that the timing of ARC Spillway construction would occur simultaneously with construction activities of the YRDP Relicensing Project. Moreover, many of the recreation-related construction activities associated with the YRDP Relicensing Project would be phased over the duration of the new license term.
USACE NBB Dam and Reservoir WCM Update	Reasonably Foreseeable	USACE	Flood management operations in the Yuba River Watershed are controlled by USACE's 1959 Master Manual of Reservoir Regulation, Sacramento River Basin, California, and, more specifically, by the NBB Reservoir WCM (USACE 1972). As discussed above, YCWA manages water releases from NBB (NBB) Dam and Reservoir during flood-related operations according to the WCM, which includes a guide curve (or rule curve) that governs the water storage and release schedule based on past weather patterns. USACE is in the process of updating the NBB WCM to reflect changed circumstances, new technology, and improved practices. The updated NBB WCM is expected to implement FIRO, which is a flexible water management approach that uses watershed monitoring data and improved weather forecasting to help water managers selectively retain or release water from a reservoir for increased resilience to droughts and floods and to better manage releases before and during a storm. When the revised WCM is completed (anticipated 2026), it will govern water releases during, and in anticipation of, floods, major storms, and high-water events.
500-year Flood Protection Project	Reasonably Foreseeable	TRLIA	Three Rivers Levee Improvement Authority (TRLIA) is improving the Reclamation District 784 urban levee system to provide 500-year flood protection to southwest Yuba County. The project would reduce flood risk, ensure the system is adaptable to climate change, and address differing flood protection levels resulting from incremental construction and improvement of the system. Project components include improving 10 miles of existing levees south of the Yuba River, east of the Feather River, north of the Bear River, west of the Western Pacific Interceptor Canal (WPIC) and southeast of the Olivehurst Detention Basin. Approximately 3 miles of new levee would be constructed on the west edge of the Yuba Goldfields and to extend the WPIC West Levee to the north.
Marysville Ring Levee	In Progress	USACE, YCWA, CVFPB, Marysville Levee District	This project reinforces the 7.5-mile-long Marysville Ring Levee, slated for completion by 2026. The levee system reduces flood risk for the historic City of Marysville including from flooding along the lower Yuba River. Once completed, the levee system is anticipated to reduce flood risk for the City of Marysville by providing close to a 200-year level of protection.
Yuba River North Training Wall (NTW) Project	Phase 1 completed; Phase 2 in progress	TRLIA	TRLIA is reshaping the existing Yuba River NTW and constructing a new embankment to extend the wall upstream to meet high ground and provide 100-year flood protection to the community of Hallwood. The project components include a tie-in embankment and potential habitat restoration areas. The total project footprint will be up to approximately 100 acres and extend approximately 1,000 feet upstream from the east end of the existing NTW embankment to connect the NTW to high ground and provide a complete, stable embankment. The embankment crest will be 5 feet above the 200-year design water surface elevation.
Yuba Subbasins Water Management Plan: A Groundwater Sustainability Plan (GSP) Implementation	Present	YCWA, CID, City of Marysville	In 2014, the State of California enacted the Sustainable Groundwater Management Act (SGMA) to provide local and regional agencies the authority to sustainably manage groundwater. SGMA required the preparation of a GSP for medium- or high-priority basins/subbasins to reach sustainability within 20 years of implementing their sustainability plans. DWR, which oversees SGMA, approved the GSP for the North and South Yuba groundwater subbasins in 2021. Sustainable groundwater management criteria were developed with measurable objectives that allow for changes in the subbasin to the extent they are not significant and unreasonable. The components of the GSP are focused on the four sustainability indicators defined through SGMA that are relevant to the Yuba Subbasin, including: (1) chronic lowering of groundwater levels; (2) depletion of interconnected surface water; (3) significant and unreasonable degraded water quality; and (4) significant and unreasonable land subsidence. The GSP concluded that because the Yuba Subbasins are sustainable under historical, current, and projected conditions (including incorporating the effects of climate change), no projects or management actions are required to achieve sustainability. However, even with the existing sustainable conditions, the GSP includes projects and management actions to assist in enhancing management capability and improve the understanding of the groundwater system. Further, an adaptive management approach was developed to allow for response to unanticipated conditions (YCWA 2019).
Cordua Groundwater Monitoring Well	Reasonably Foreseeable	CID	Cordua regularly participated in Groundwater Substitution Transfers in coordination with DWR and YCWA and as of 2020 has signed a Yuba Accord Conjunctive Use agreement with YCWA. New requirements set by DWR for the 2020 transfer required that all participating transfer wells have a corresponding monitoring well within a 2-mile radius. The monitoring well must not be used for the transfer and must have the same depth as the related transfer wells. The district has been monitoring 50+ wells since 1991 and the accumulation of data is used to monitor groundwater conditions over time and prevent any third-party impacts to surrounding water users. CID is proposing the installation of a new monitoring well to improve the accuracy and reliability of its monitoring well network (YCRWMG 2023)
WWD In-Lieu Recharge Project	Present	WWD, YCWA	The Wheatland Project was implemented in the mid 2000's with the construction of canals and pumping stations to deliver surface water to WWD. The project was a Proposition 13 Conjunctive Use Storage Project, with 50% of the cost of construction funded through a Proposition 13 grant. This project was funded to improve basin storage in the area, providing greater conjunctive use opportunities and increasing the volume of GWS transfers from the Yuba Subbasins. The Wheatland Project is described in Chapter 6 - Groundwater Resources of this DEIR.

Table 4.9-1. (Continued).

Project	Status	Primary Agencies	Description
			Lower Yuba River (cont.)
Yuba County Integrated Regional Water Management Plan (IRWMP) Implementation	Present	Yuba County, YCWA, Regional Water Management Group (RWMG)	In 2002, the State Legislature passed the IRWM Planning Act (SB 1672) to encourage local entities to improve water quality and water supply reliability to meet the state's agricultural, domestic, industrial and environmental water needs. The Yuba County IRWM region encompasses Yuba County and extends from the Sierra Nevada foothills to the confluence of the lower Yuba River and the Feather River near Marysville. The Yuba County IRWMP was initially developed and adopted by 12 agencies in Yuba County in 2008. The IRWMP was updated in 2015 and again in 2018. The 2018 Update identifies seven goals: • Ensure adequate and reliable water supply that meets the diverse needs of the region • Protect, restore, and enhance water quality for water users and in support of healthy watersheds • Preserve and restore watershed health and promote environmental stewardship • Enhance regional economic development • Support efforts to improve public safety • Address climate vulnerabilities and reduce greenhouse gas emissions • Promote equitable distribution of resources to disadvantaged communities and Tribes across the region. The Yuba County IRWMP has developed objectives that include both quantitative or qualitative measures, as required by DWR's guidelines. The RWMG is responsible for evaluating IRWMP implementation actions and performance (YCRWMG 2018).
Narrows 2 LWM Mitigation Plan	Completed	YCWA	As mitigation for a 2015 Narrows 2 temporary flow deviation event, YCWA installed 30 pieces of LWM distributed among three locations along the lower Yuba River (RM 20, RM18.4) during September 2019. Each of the locations were selected based on their suitability to retain LWM and ability to provide benefits to a variety of salmonid lifestages.
USACE Authorized Operations and Maintenance of Existing Fish Passage Facilities at Daguerre Point Dam on the Lower Yuba River	In Progress	USACE	USACE's authorized O&M activities associated with Daguerre Point Dam include limited discretionary actions related to the existing fish passage facilities and implementation of voluntary and protective conservation measures for anadromous fish and habitat enhancement purposes, including ongoing gravel augmentation in the Englebright Dam Reach and a LWM placement program.
Hallwood Side Channel and Floodplain Restoration Project	Completed	YCWA, Yuba County, USFWS, SYRCL, CNRA Wildlife Conservation Board, Teichert, Western Aggregates	The Hallwood Project is designed to enhance habitat in the lower Yuba River by increasing the extent and duration during which juvenile Chinook salmon and steelhead are able to access the floodplain over a range of flows, as well as create and enhance perennial and seasonal side channel habitat. Project improvements have enhanced up to 157 acres of seasonally inundated riparian floodplain, approximately 1.7 miles of perennial side channels, and approximately 6.1 miles of seasonally inundated side channels, alcoves, and swales. Enhancements were made through land surface changes (e.g., removal of the Middle Training Wall), riparian planting, and placement of LWM embedded to simulate a more natural river channel at key locations. The project also reduces flood risk by improving the lower Yuba River's ability to withstand floods. About 3.2 million cubic yards of sediment were removed throughout the Project Area, reducing flood risk for local communities by lowering water surface elevations during large storms. Project construction was completed in November 2023.
Yuba River Canyon Salmon Habitat Restoration Project	Completed	USFWS, Yuba County	Funded by the Anadromous Fish Restoration Program (AFRP), the project was designed to improve about 8.5 acres of anadromous salmonid spawning habitat and juvenile rearing habitat. The project is located in the lower Yuba River at the lower end of the Englebright Dam Reach, just above the confluence with Deer Creek. The restoration approach was to excavate, grade and sort the alluvial bar and enhance existing in-river topography, while reducing the amount of armoring on the adjacent alluvial bar. Construction was completed in the fall of 2018 (USFWS and Yuba County 2016). The States Land Commission approved a 10-year General Lease - Public Agency Use to the USFWS through August 16, 2027.
Timbuctoo Acquisition and Restoration Project	Reasonably Foreseeable	BYLT	The project includes protection of three miles of the lower Yuba River containing Chinook salmon and steelhead spawning habitat and 700 acres of surrounding lands with intact blue oak woodlands. The property is currently privately owned and under threat of subdivision and conversion to a housing development project. BYLT is seeking funding to cover part of the property acquisition and to passively restore three miles of lower Yuba River for aquatic habitat through revegetation. This project supports the Yuba IRWMP by encouraging groundwater recharge and protecting existing groundwater levels through preventing home construction and well drilling on 700-acres. It will protect surface water quality of tributaries flowing directly into the lower Yuba River and protect river flows and river surface water quality. It also supports the Lower Yuba River Accord through protection of Chinook salmon and steelhead spawning areas and habitat improvements along the lower Yuba River. In addition to salmonid species, the federally-listed foothill yellow legged frog is also documented in this reach of the river. Public access to the property will likely be limited, however, there will still be opportunities for education and recreation (YCRWMG 2023).
Upper Long Bar Habitat Restoration Project	In Progress	USFWS, SYRCL	The project will restore at least 40 acres of floodplain habitat and nearly one mile of off-channel habitat at the downstream end of Long Bar in the Parks Bar to Marysville section of the lower Yuba River. The habitat enhancements will include floodplain lowering, side channel enhancement, riparian planting, and LWM placement. The completed Upper Long Bar project will reconnect flood flows with restored floodplains. Lateral reconnection will increase habitat availability as well as enhanced hydraulic complexity and quality of available flow for the benefit of spring- and fall-run Chinook salmon and steelhead. Additionally, this project supports the population doubling goals of the USFWS' Anadromous Fish Restoration Program (YCRWMG 2023). The project is funded by the California Wildlife Conservation Board's 2020 (Prop 1) Stream Flow Enhancement Program.
Lower Long Bar Restoration Project	Completed	USFWS, SYRCL, other parties	The project involved the restoration of 42 acres along the lower Yuba River. Efforts included removing approximately 350,000 yards of hydraulic mining debris, lowering floodplains, designing channels, and planting vegetation. Since project completion, naturalized side channels, vegetation recruitment, and extended rearing of juvenile salmonoids have been observed.
Upper Rose Bar Habitat Restoration Project	In Progress	YCWA, SYRCL, Yuba County, USFWS, and Wildlife Conservation Board	Located about 9 miles downstream of Englebright Dam, the project will restore about 43 acres to increase Chinook salmon and steelhead spawning habitat (about 5 acres), create backwater habitat and reduce bank erosion on the lower Yuba River. The project is intended to: • Increase the amount of high-quality spawning habitat by modifying hydraulic (i.e., depth and velocity) and substrate conditions to within the ranges preferred by Chinook salmon and steelhead during typical spawning periods. • Create a design that mimics natural morphological features (e.g., riffle, pool) that would not erode significantly through typical non-flood control related operations. Reduce bank erosion that may be contributing mercury contaminated soil to the Yuba River. Land-side construction began in 2023, and in-water work was initiated 2024.
Hallwood/Cordua Canal – Fish Screen Return Line Replacement	Reasonably Foreseeable	HIC, CID	HIC and CID have a canal that diverts water from the lower Yuba River near Daguerre Point Dam for irrigating their districts along with the Ramirez Water District. The diversion is the main source of irrigation for 24,500 acres of prime farmland. A fish screen was installed downstream in the district canal and a 24" return line that transports fish back to the lower Yuba River. However, the return line to the river has had issues over the years due to extreme flows changing the river alignment and depth of the riverbed. These conditions have made maintaining the flow in the line for fish returning to the river difficult. The return line has become deep in the current river channel and becomes blocked by large rocks and debris during high water events. The districts cannot divert water from the river without this return line. The districts' fish screen return pipe is being inundated with large amounts of gravel and the districts are collaborating to replace the pipe at a straighter alignment to the river. This new alignment would allow for better flow and maintenance as well as a secondary discharge point during high water events (YCRWMG 2023).
South Canal Diversion Water Supply and Fish Passage Enhancement Annual Maintenance Project	In Progress	YCWA	River alluvium is annually excavated from the south channel of the lower Yuba River to allow for additional water flow into the south channel and subsequently enhance fish passage for Chinook salmon and steelhead in the YCWA South Canal Diversion. Annual maintenance (2023-2027) involves removing sediment from an 800-foot-long reach of the south channel of the lower Yuba River between the south channel/main channel junction and the entrance to the South Canal Diversion. The project additionally involves installing a temporary access ramp, constructing temporary berms, spreading excavated river alluvium on the adjacent gravel bar, installing cobble lining and root wad, and conducting site clean-up.

Table 4.9-1. (Continued).

Project	Status	Primary Agencies	Description
Lower Yuba River (cont.)			
Yuba City Boat Ramp Sediment Removal Project	Phase 1 complete; Phase 2 In Progress	Sutter Butte Flood Control Agency	Sediment buildup in portions of the Feather River, exacerbated by the Oroville Dam Spillway incident of 2017, created dangerous conditions for recreational users, made some boat launch facilities nearly unusable, and hampered public safety as it has affected emergency vessel launching capabilities. The project will remove sediment for safety purposes, restore recreation access to the Feather River, and to restore fish passage at the confluence of the Feather and Yuba Rivers. Phase 1 was completed in 2021 and involved dredging approximately 65,000 cubic yards of sediment at the confluence of the Feather River and Yuba River. Phase 2 would involve dredging an additional 250,000 cubic yards of sediment if additional funding becomes available, for a total of 315,600 cubic yards. The timing of Phase 2 will depend on availability of funding. Overall, the project aims to restore safe recreational access to the Feather River and to restore fish passage at the confluence of the Feather and Yuba Rivers.
Pumpline Solar Project	In Progress	BVID	BVID proposes to install solar infrastructure to supplement the cost of lifting Yuba River water 35 feet to the head of its Pumpline Canal, which provides water to support about 4,500 acres of production agriculture (rice, tree crops, etc.). The project would protect against predicted PG&E rate increases, improve resiliency against Public Safety Power Shutoff events, help to maintain agricultural operations functioning, and increase fire prevention and protection.
Various Water Supply Improvement Projects	Reasonably Foreseeable	HIC, CID, Camptonville Community Services District Linda County Water District, North YCWA District, City of Wheatland, City of Marysville, Yuba County, and YCWA	The identified agencies are proposing various water supply improvement projects, including diversion structure replacements, ditch lining, ditch undergrounding to pipelines, flume capacity expansions, groundwater well replacement, new groundwater monitoring well installation, SCADA system upgrades, and other water infrastructure upgrades to allow for remote operation, provide real-time flow rate data acquisition and automated data sharing, achieve more precise water application, reduce seepage and overtopping losses, improve water supply reliability, and enable "smarter" operation to increase overall water use efficiency. The water savings and resiliency would also allow for continued avoidance of "deficit pumping." Furthermore, the water savings from these projects would improve water supply conditions that would allow the Yuba Subbasins water suppliers to implement their groundwater substitution transfer program which provides benefits during dry years to water suppliers throughout the state (YCRWMG 2023).
Areas Downstream of the Lower Yuba River[14]			
Oroville Facilities Hydroelectric Project FERC Relicensing (FERC Project No. 2100)	Present	FERC, DWR	The Oroville Facilities Hydropower Project is a 762 MW project owned by DWR and is a key component of the SWP. The project includes the Oroville Wildlife Recreation Area, numerous other recreational facilities, and three main FERC developments: (1) Oroville (including Oroville Dam, containing the Hyatt Pumping and Generation Plant (PGP)); (2) Thermalito (including the Thermalito Dam/Diversion Pool, Power Canal, and Thermalito Dam PGP, Thermalito Forebay/Dam, Thermalito Forebay Dam's PGP, and Thermalito Afterbay and Dam); and (3) the Feather River Fish Hatchery (including the Fish Barrier Dam, which directs anadromous fish into the FRFH and its appurtenant facilities). As part of the SWP, the Oroville Facilities are operated for flood management, power generation, water quality improvement in the Delta, recreation, and fish and wildlife enhancement. The objective of the relicensing process is to continue O&M of the Oroville facilities for electric power generation, along with implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license. The initial FERC license for the Oroville Facilities, issued on February 11, 1957, expired on January 31, 2007. A settlement agreement was finalized in 2006. DWR published a Final EIR and NOD in 2008. The final WQC was issued by SWRCB in 2010. NMFS issued a BO in 2016. DWR is awaiting the FERC license renewal.
South Feather Power Project FERC Relicensing (FERC Project No. 2088)	Present	FERC, South Feather Water and Power Agency (SFWPA)	The South Feather Power Project is a water supply/power project composed of four hydroelectric developments (Sly Creek, Woodleaf, Forbestown, and Kelly Ridge) located on the South Fork Feather River, Lost Creek (tributary to the South Fork Feather River), and Slate Creek (tributary to the North Yuba River). The project stores 171,986 AF of water and generates an average of 514.1 gigawatt hours of power annually. In 2012, SFWPA, DWR, and the State Water Contractors entered into the settlement agreement that allows DWR to request that SFWPA temporarily cease discharges from the Kelly Ridge Powerhouse into the Thermalito Diversion Pool and release an equivalent amount of water into Oroville Reservoir. The final WQC was issued by SWRCB in 2018. In 2023, FERC staff prepared a draft SEIS to supplement the 2009 FEIS in accordance with FERC filings made subsequent to the issuance of the FEIS, including the settlement agreement, the WQC, and revised final conditions filed by the USFS under section 4(e) of the FPA. The draft SEIS also informed ongoing consultation with USFWS under the ESA and addresses several newly listed species. SFWPA is awaiting the FERC license renewal.
Coordinated Long-term Operation of the CVP and the SWP	Past and Present	Reclamation, DWR, USFWS, NMFS	Reclamation and DWR reinitiated consultation under Section 7 of the ESA, as amended, on the Coordinated Long-Term Operation of the CVP and SWP in 2021. Reclamation completed a biological assessment in 2023 to support reinitiation of consultation, which documented the potential effects of its proposed action on federally listed endangered and threatened species that have the potential to occur in the CVP/SWP project area and critical habitat for these species. The USFWS (2024) and NMFS (2024) issued BO that contain Reasonable and Prudent Actions that limit the operations of the CVP and SWP for protecting federally listed endangered and threatened species.
CVP and SWP 1986 Coordinated Operations Agreement (COA), including 2018 Addendum	Past and Present	Reclamation and DWR	Reclamation and DWR operate their respective facilities in accordance with the COA, which defines the rights and responsibilities of the CVP and SWP with respect to in-basin water needs and provides a mechanism to account for those rights and responsibilities. Congress, through Public Law 99-546, authorized and directed the Secretary of the Interior to execute and implement the COA in 1986. The COA defines the project facilities and their water supplies, sets forth procedures for coordinating operations, and identifies formulas for sharing joint responsibilities for meeting Delta standards and other legal uses of water in a manner that meets Sacramento Valley and Delta needs while maintaining their respective water supplies. The COA further identifies how un-stored flow is shared, sets up a framework for exchange of water and services between the projects, and provides for periodic review of the agreement. In 2018, Reclamation and DWR amended four key elements of the COA to address changes since the COA originally was signed: (1) in-basin uses; (2) export restrictions; (3) CVP use of Banks Pumping Plant up to 195,000 AFY; and (4) periodic review. The COA sharing percentages for meeting Sacramento Valley in-basin uses now vary from 80% responsibility of the CVP and 20% responsibility of the SWP in wet year types to 60% responsibility of the CVP and 40% responsibility of the SWP in critical year types.
Long-term and Short-term Water Transfers	Present	Reclamation, San Luis and Delta–Mendota Water Authority (SLDMWA), Biggs–West Gridley Water District, BVID	These projects provide water to municipal, agricultural, and ecosystem water users, including wildlife refuges with programs that transfer water from Northern California to the San Joaquin Valley and Southern California across the Delta (Reclamation and SLDMWA 2019; Biggs–West Gridley Water District 2021; BVID 2009).
Sites Reservoir Project	Present and Future	Reclamation, Sites Project Authority	The Sites Reservoir Project would involve the construction and operation of an off-stream surface water reservoir to provide direct and real benefits to instream flows, the Delta ecosystem, and water supply reliability. The reservoir inundation area would be in rural, unincorporated areas of Glenn and Colusa Counties, and project components would be located in Tehama County, Glenn County, Colusa County, and Yolo County. The project would use existing infrastructure to divert unregulated and unappropriated flow from the Sacramento River at Red Bluff and Hamilton City and convey the water to a new off-stream reservoir west of the community of Maxwell, California. New and existing facilities would move water into and out of the reservoir, with ultimate release back to the Sacramento River system via existing canals and a new pipeline located near Dunnigan. Water released from Sites Reservoir would be used to benefit local, state, and federal water use needs, including public water agencies, anadromous fish species in the Sacramento River Watershed, wildlife refuges and habitats, and the Yolo Bypass to help supply food for delta smelt. A Final EIR/EIS and NOD was published in 2023.
Delta Conveyance Project	Future	DWR, Delta Conveyance Design and Construction Authority	The project would develop a new diversion and conveyance facilities in the Delta to restore and protect the reliability of SWP water deliveries, and potentially CVP water deliveries south of the Delta, consistent with the state's Water Resilience Portfolio. It would modernize the state's water infrastructure to: (1) capture and move more water during wet seasons to better endure dry seasons; (2) minimize future losses from climate-driven weather extremes; (3) protect against earthquakes disrupting water supplies; and (4) continue meeting regulatory water quality and fishery requirements, and add new operating rules for further fishery protections, among others (DWR 2023). DWR selected the Bethany Reservoir alignment at 6,000 cfs conveyance capacity as the proposed project. The Bethany Reservoir alignment consists of the construction, operation, and maintenance of new SWP water diversion and conveyance facilities in the Delta that would be operated in coordination with the existing SWP facilities. The new water conveyance facilities would divert up to 6,000 cfs of water from two new north Delta intakes through state-of-the-art fish screens and convey it via a single tunnel on an eastern alignment directly to a new pumping plant and aqueduct complex between Byron Highway and Mountain House Road near Mountain House in the south Delta, discharging it to the Bethany Reservoir for delivery to existing SWP export facilities. A Draft EIR was issued by DWR in 2022 and a certified Final EIR was issued in 2023. A Draft EIS was issued by USACE in 2022 and a Final EIS has not yet been issued (USACE 2023).

[14] As explained in Chapter 4 and in this chapter above, for most environmental resources, the geographic area that could be affected by the Proposed Projects and is appropriate for a cumulative impact analysis includes the Yuba River Watershed and the streams, water bodies, groundwater basins, and facilities that could be affected by changes in Yuba River outflow to the Feather River. However, the geographic extent considered for the cumulative analyses conducted for surface water resources, surface water quality and fisheries resources extends downstream of the lower Yuba River and includes the lower Feather River, the lower Sacramento River and the Delta (see rationale in Section 4.9.1.1).

Table 4.9-1. (Continued).

Project	Status	Primary Agencies	Description
			Lower Yuba River (cont.)
Bay-Delta Water Quality Control Plan Update	Past, Present, and Future	SWRCB, CVRWQCB, San Francisco RWQCB	Water quality and flow objectives to meet water quality criteria are included in the Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary (Bay-Delta Plan) (SWRCB 2006). The SWRCB is actively engaged in the process of updating the Bay-Delta Plan through two separate processes (Plan amendments) – first (Phase 1) efforts focusing on the lower San Joaquin River flows and Southern Delta salinity, and later (Phase 2) efforts focusing on the Sacramento River and its tributaries, Delta eastside tributaries, Delta outflows, and interior Delta inflows. In 2018, the SWRCB completed the Phase 1 efforts by adopting Bay-Delta Plan amendments focused on flows in the Lower San Joaquin River and its three major tributaries (the Stanislaus, Tuolumne, and Merced Rivers) for the protection of fish and wildlife, and establishing a new salinity objective for the reasonable protection of agricultural uses in the southern Delta. The SWRCB initiated Phase 2 to evaluate updating portions of the Bay-Delta Plan including criteria for Delta outflow, Sacramento and non-San Joaquin River tributaries inflow, Suisun Marsh salinity, Delta Cross Channel Gate closure, Delta export limits, and reverse flows in Old and Middle River. In 2016, the SWRCB issued a working Draft Scientific Basis Report, which was finalized during October 2017, to evaluate possible Sacramento/Delta updates to the Bay-Delta Plan. Subsequently in July 2018, the SWRCB released the *Framework for the Sacramento/Delta Updates to the Bay-Delta Plan* (Framework). The SWRCB's 2018 Framework proposed new inflow objectives that included both a narrative and numeric component. The numeric component included maintaining inflows from the Sacramento/Delta tributaries at 55% of unimpaired flow, within an allowed adaptive range between 45 and 65% of unimpaired flow. The SWRCB's 2018 Framework also suggested that it may be possible for "Voluntary Agreements" (VAs) to be reached that provide for both flow and habitat restoration actions that could achieve the same benefits as 55% of unimpaired flow or more with a lower water supply cost. In December 2018, CDFW, DWR and other parties submitted to the SWRCB a *Framework Proposal for Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan,* which proposed to improve conditions for fish through targeted river flows and a suite of habitat-enhancing projects, including floodplain inundation and physical improvement of spawning and rearing areas. In 2022, the SWRCB received a Memorandum of Understanding (MOU) signed by CNRA, California EPA, DWR, and CDFW proposing VAs as an alternative to updating and implementing the Bay-Delta Plan (CNRA 2025). If the SWRCB adopts a "regulatory pathway" that involves an unimpaired flow requirement for the Bay-Delta Plan Update, it is anticipated that the SWRCB would seek implementation of those unimpaired flow requirements through the WQCs that would be issued for the FERC relicensings that are occurring in the Yuba River Watershed. As described for Alternative 2 in Chapter 3, FERC has stated that it will be conducting the YRDP, Narrows, and YB/DS relicensings as a basin-wide proceeding. Therefore, if unimpaired flow requirements were part of the "regulatory pathway" adopted by the SWRCB as part of the Bay-Delta Plan Update, it would be reasonable to expect that all of the FERC relicensing projects (i.e., YRDP, Narrows Project and the YB/DS projects) would be required to operate in accordance with the conditions of the new FERC licenses (including the 4(e) flow requirements) that would be in effect, as well as operations necessary to comply with an unimpaired flow requirement.
Healthy Rivers and Landscapes (HR&L) Program	Reasonably Foreseeable	SWRCB	During September 2023, the SWRCB released the DSR for potential Sacramento/Delta updates to the Bay-Delta Plan for public review and comment. The DSR (SWRCB 2023) also included a Final Draft Scientific Basis Report Supplement in support of the proposed VAs (now referred to as the HR&L Program). The DSR stated that it served as a draft SED for CEQA compliance, and it evaluated potential economic, environmental, and other impacts, and associated mitigation measures, of a range of alternatives for updating the Bay-Delta Plan. Those alternatives included: (1) an alternative based on the SWRCB's 2018 Framework that states that the SWRCB's staff would make many discretionary future decisions about how the 2018 Framework's water quality objectives would actually be implemented; (2) an alternative that would implement the proposed HR&L Program (formerly referred to as the proposed VAs); and (3) several "modular" alternatives that might be implemented with either the SWRCB's 2018 Framework-based alternative or the HR&L-based alternative. YCWA, as one of the HR&L Parties, has developed a proposed HR&L project for the Yuba River consisting of a proposed flow contribution and construction of habitat enhancements. The flow contribution includes two components of water to be dedicated to Delta outflow. First, all Yuba Accord Released Transfer Water (as that term is defined in the Yuba Accord Water Purchase Agreement), from stored water releases that occurs during April, May, and June in Above Normal, Below Normal, and Dry years that DWR cannot export or back into Oroville Reservoir would be contributed to the HR&L Program (Component A). The second component (Component B) is an additional release of stored water from NBB Reservoir, reducing end of WY (September 30) storage by as much as 50,000 acre-ft, to be released during the months of April, May, or June in Above Normal, Below Normal, Dry years. Along with the other elements of the HR&L Program, it is reasonably possible to qualitatively evaluate how YCWA's HR&L proposal would be implemented and therefore to analyze its environmental effects as a cumulative project. With respect to the cumulative analysis for Alternative 2 in this DEIR, it is noted that the HR&L Program and a 55% unimpaired flow requirement under Alternative 2 are mutually exclusive because it would not be possible to implement both operations at the same time.

Notes: ARC=Atmospheric River Control, BLM=Bureau of Land Management, BO=Biological Opinion, BVID=Browns Valley Irrigation District, BYLT=Bear-Yuba Land Trust, CalFire=California Department of Forestry and Fire Protection, CDFW=California Department of Fish and Wildlife, CEQA=California Environmental Quality Act CID=Cordua Irrigation District, CNRA=California Natural Resources Agency, CVFPB = Central Valley Flood Protection Board, CVRWQCB=Central Valley Regional Water Quality Control Board, DWR=California Department of Water Resources, FERC=Federal Energy Regulatory Commission, FIRO=forecast-informed reservoir operations, GSP=Groundwater Sustainability Plan, HIC=Hallwood Irrigation Company, HID=Hallwood Irrigation District, HR&L=Healthy Rivers & Landscapes, Interior=U.S. Department of the Interior, IRWMP=Integrated Regional Water Management Plan, LWM=large woody material MOU=Memorandum of Understanding, NBB=New Bullards Bar, NBBD=New Bullards Bar Dam NID=Nevada Irrigation District, NMFS=National Marine Fisheries Service, NOP=Notice of Preparation, NTW=North Training Wall, O&M=operation and maintenance, PG&E=Pacific Gas and Electric Company, Reclamation=U.S. Bureau of Reclamation, RWMG=Regional Water Management Group, SNC=Sierra Nevada Conservancy, SCADA=Supervisory Control and Data, SED=Substitute Environmental Document, SEIR=Supplemental Environmental Impact Report, SGMA=Sustainable Groundwater Management Act, SLDMWA=San Luis and Delta–Mendota Water Authority, SRGO= Restoration Projects Statewide, SWRCB=State Water Resources Control Board, SYRCL=South Yuba River Citizens League, SWP=State Water Project TNC=The Nature Conservancy, TRLIA=Three Rivers Levee Improvement Authority, USACE=U.S. Army Corps of Engineers, USFS=United States Forest Service, USFWS=United States Fish and Wildlife Service, WCM=Water Control Manual, WPIC=Western Pacific Interceptor Canal, WQC=Water Quality Certification, WWD=Wheatland Water District, WY=water year YCWA=Yuba County Water Agency, YRDP=Yuba River Development Project, Yuba Subbasins=North Yuba and South Yuba Subbasins of the Sacramento Valley Groundwater Basin YWI=Yuba Watershed Institute.

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4.9.1.3 Cumulative Impact Assessment Methodology

Each environmental resource chapter in this DEIR includes a section that addresses potential cumulative effects anticipated from implementation of the Proposed Projects (or an alternative), together with related projects in the Yuba River Watershed and downstream waterbodies and facilities. Potential cumulative impacts associated with the Proposed Projects and alternatives are analyzed both quantitatively and qualitatively in this DEIR. The CEQA alternatives comparisons that are evaluated in this EIR for cumulative effects purposes are:

- Cumulative Condition (Proposed Projects) compared to the Existing Condition
- Cumulative Condition (Alternative 1) compared to the Existing Condition
- Cumulative Condition (Alternative 2) compared to the Existing Condition
- Cumulative Condition (No Project Alternative) compared to the Existing Condition

The purpose of the comparisons identified above is to determine whether the incremental effects of the Proposed Projects and alternatives would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, the other current projects, and probable future projects (PRC Section 21083, subdivision (b)(2)). "*The [proposed] project must make some contribution to the impact; otherwise it cannot be characterized as a cumulative impact of that project*" (Sierra Club v. West Side Irrigation Dist. (2005) 128 Cal.App.4th 690, 700). Thus, "[t]*he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable*" (CEQA Guidelines, Section 15064, subd. (h)(4)). Also, even if the Proposed Projects and alternatives will not have an incremental effect that is "cumulatively considerable," the lead agencies still are required to briefly describe the basis for reaching this conclusion in the EIR (CEQA Guidelines, Section 15130(a)).

Applying these rules to the cumulative analysis conducted for this DEIR, the resource-specific findings in each of the DEIR chapters may conclude that the Proposed Projects or an alternative would not result in any significant cumulative impacts on a resource category, if the analysis concludes that the Proposed Projects or an alternative would not have any impacts on that resource category. For resource categories where these comparisons show no impacts, it is appropriate for the discussion in the respective DEIR chapter to state that conclusion and then explain that, for this reason, the Proposed Projects or an alternative would not have any cumulative impacts on the resource category.

The cumulative analysis also considers a cumulative condition under the No Project Alternative, which was evaluated because of the potential for future environmental conditions resulting from the No Project Alternative to be different from the Existing Condition. For most resources considered in this DEIR, however, the No Project Alternative would not substantially differ from the Existing Condition because Yuba Water would continue its existing YRDP and Narrows Project operations, except for hydropower generation, outside of FERC jurisdiction. By contrast, because halting all YRDP and Narrows Project hydropower operations under the No Project Alternative would reflect a significant departure from the Existing Condition in terms of power production and energy consumption, as well as air quality and greenhouse gas emissions, the

impact analyses in Chapter 7 (Power Production and Energy Consumption) and Chapter 15 (Air Quality and Greenhouse Gas Emissions) include a discussion of potential cumulative impacts related to the No Project Alternative. Because no potentially significant cumulative impacts associated with the No Project Alternative are anticipated to occur to any other resource categories, and there is little to no possibility of the No Project Alternative resulting in a cumulatively considerable incremental impact to the cumulative condition to any other resource categories, no other chapters include cumulative impact discussions for the No Project Alternative. As discussed in other chapters of this DEIR, model output was used to demonstrate whether hydrologic changes associated with the Proposed Projects or an alternative would be expected to directly result in resource-specific impacts. Building on this approach, model output also was used as a tool in the cumulative impact assessment to help demonstrate not only whether hydrologic changes associated with the Proposed Projects or alternative would be expected to directly result in a significant impact, but also to determine whether it would be likely that such hydrologic changes would or would not be expected to result in an incremental contribution to potentially significant cumulative impacts.

To quantitatively evaluate changes in hydrologic conditions that may be caused by projects, they must be well-defined and reasonably foreseeable. Therefore, only those projects that have been adequately defined (i.e., in recent project-level environmental documents or modeling) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment. This quantitative analysis focuses largely on water-related issues because the anticipated future cumulative conditions have been established through the modeling process. To the extent possible, cumulative impacts related to resources such as surface water resources, hydropower, surface water quality, fisheries and aquatic resources, terrestrial resources, recreation, visual resources, and cultural resources are evaluated quantitatively utilizing model output to provide an indication of the potential incremental contributions of the Proposed Projects and alternatives to cumulative impacts. However, to fully address cumulative impacts, these analyses also may be supplemented with an accompanying qualitative analysis.

The qualitative analysis of cumulative effects takes into account the other projects that are being discussed by various entities but which are either not able to be characterized in the modeling or not yet sufficiently defined for modeling purposes. Cumulative impacts related to resources such as groundwater, air quality, and land use generally are evaluated qualitatively.

The analysis of resource-specific cumulative impacts is presented in each resource chapter of this DEIR. For cumulative impacts assessment purposes, the tools, approach, impact indicators, and significance criteria used to determine the environmental impacts of hydrologic changes are the same as those used in the resource-specific impact analysis. The level of detail associated with the cumulative analysis may vary by resource, and is dependent upon whether the Proposed Projects or an alternative would result in any potential impacts to the resource. To assess the incremental contribution of the Proposed Projects (and alternatives) to cumulative impacts, the future with-project conditions are compared to the future without-project conditions. By comparing the potential impacts of the Proposed Projects (and alternatives) against the future without-project cumulative conditions, the incremental contributions of the YRDP and Narrows Projects to overall cumulative impacts can be determined. The approach for addressing potential cumulative impacts associated with other future actions that cannot be defined quantitatively at this time are discussed below.

The qualitative analysis of cumulative impacts considers "reasonably foreseeable" projects that are in the planning stage or that are being developed by various entities, but that have not been sufficiently defined to be evaluated in a quantifiable manner. Projects that are not yet quantifiable using modeled simulations, but that could have an effect on various resources, are addressed qualitatively to provide as much information on potential cumulative impacts as possible. For some resources including surface water resources, surface water quality, and fisheries resources, this qualitative analysis complements the discussion that is based on a quantitative evaluation, and provides additional qualitative context of potential future cumulative impacts and benefits of the Proposed Projects (and alternatives). All other resource topics that are not dependent on hydrology, water level, or water quality or that are not effectively evaluated using hydrologic modeling (i.e., groundwater, air quality, land use) are assessed in a qualitative manner only.

Reasonably foreseeable projects to be included in the resources-specific qualitative analyses were identified through a collaborative, multi-step process that included input provided by the lead agency and application of several decision-making criteria. The criteria used to identify individual projects for consideration in the cumulative analysis included the following: (1) whether the project is under active consideration by a project proponent and/or lead agency; (2) whether the project would be operational or completed within the timeframe being considered for the Proposed Projects and alternatives; and (3) whether the project, in combination with the Proposed Projects and alternatives, has the potential to affect the same resources. Projects determined to meet all three of the above criteria are considered to be reasonably foreseeable and within the planning horizon for the Proposed Projects (and alternatives) and, thus, were selected for inclusion in the qualitative cumulative analysis presented in each of the resource-specific chapters of this DEIR (Table 4.9-1).

4.9.1.4 Analysis of Potential Cumulative Impacts in this EIR

The DEIR's analysis conforms with Section 15130(b) of the State CEQA Guidelines, which specifies that the "discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the Proposed Projects alone. The discussion should be guided by the standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact."

To be consistent with CEQA requirements, there are four different possible impact statement outcomes for the cumulative effects analysis:

1. There would be no significant cumulative impact. This conclusion is appropriate when the combined effects of the project and closely related past, present, and reasonably foreseeable probable future projects would be less than significant. This requires a discussion providing evidence to support the conclusion.
2. There is an existing significant cumulative impact, but the project's incremental contribution would not be considerable. This conclusion is appropriate when the combined effects of closely related past, present, and reasonably foreseeable probable future projects would be cumulatively significant, but the project's incremental contribution to the significant cumulative impact would not be considerable. This requires a discussion of why

the project's incremental contribution would not be significant or cumulatively considerable. For example, there may be mitigation measures implemented to reduce/avoid/minimize the impacts of the project, or the magnitude of the incremental effect of the project may be very small, demonstrating that the project's contribution to any significant cumulative effects would be less than significant.

3. There is an existing significant cumulative impact, and the project's incremental contribution would be considerable. This conclusion is appropriate when the combined effects of closely related past, present, and reasonably foreseeable probable future projects are already cumulatively significant, and the project's incremental contribution to the significant cumulative impact would be cumulatively considerable. This requires a discussion of all feasible mitigation measures that could reduce/avoid/minimize the project's contribution to the significant cumulative effect. If no feasible mitigation measures are available, the project's contribution to the impact would remain cumulatively considerable (significant and unavoidable).
4. There would be a new significant cumulative impact because the project's incremental contribution would be substantial when considered with other related projects. This conclusion is appropriate when the combined effects of closely related past, present, and reasonably foreseeable probable future projects are not significant, but the project's incremental contribution is substantial enough that when added to the cumulative effects of related projects, would result in a new significant cumulative impact. This requires a discussion of all feasible mitigation measures that could reduce/avoid/minimize the project's contribution to the significant cumulative effect. If no feasible mitigation measures are available, the project's contribution to the impact would remain cumulatively considerable (significant and unavoidable).

The standards used herein to determine a considerable contribution are that either the incremental contribution to the impact by the Proposed Projects (and alternatives): (1) must be substantial (i.e., it would cause an otherwise less-than-significant cumulative impact to become significant, or it would substantially increase the severity of an existing significant cumulative impact); or (2) must exceed an established threshold of significance.

This cumulative analysis assumes that the Proposed Projects' protective measures and environmental commitments (see Chapter 2 – Project Description) are implemented. The analysis herein analyzes whether, after implementation of such measures and commitments, the residual impacts of the Proposed Projects would cause a significant cumulative impact or would contribute considerably to existing/anticipated (without the Proposed Projects) significant cumulative effects. If the analysis finds that the Proposed Projects could result in a cumulatively considerable impact(s), then mitigation measures have been identified to reduce the significant incremental impact(s) of the Proposed Projects to the extent feasible when considered alongside the impacts of past, present, and reasonably foreseeable future projects in the area, aiming to lessen the combined impact on the environment by addressing the Proposed Project's incremental contribution to the cumulative effect.

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Yuba Water. *See* Yuba County Water Agency.

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CHAPTER 5

SURFACE WATER RESOURCES

5.1 Introduction

This chapter describes the environmental setting and regulatory framework for surface water resources of the Yuba River watershed, and it identifies direct, indirect and cumulative impacts of the Proposed Projects and alternatives during construction and O&M. focusing on areas affected by the Proposed Projects operations, particularly water supply and flood management.

5.2 Environmental Setting

The YRDP and Narrows Project are located in the Yuba River watershed which drains approximately 1,339 square miles of the western slope of the Sierra Nevada Mountains, including portions of Sierra, Placer, Yuba, and Nevada Counties. The Yuba River is a tributary of the Feather River, which in turn is a tributary of the Sacramento River. The watershed rises from an elevation of about 88 feet to about 8,590 feet. In general, watershed runoff is nearly equally divided between runoff from rainfall during October through March and runoff from snowmelt during April through September. Figure 5.2-1 shows the Yuba River watershed and major infrastructure. Unless otherwise indicated, facilities shown within the Yuba River watershed are owned and operated by Yuba Water.

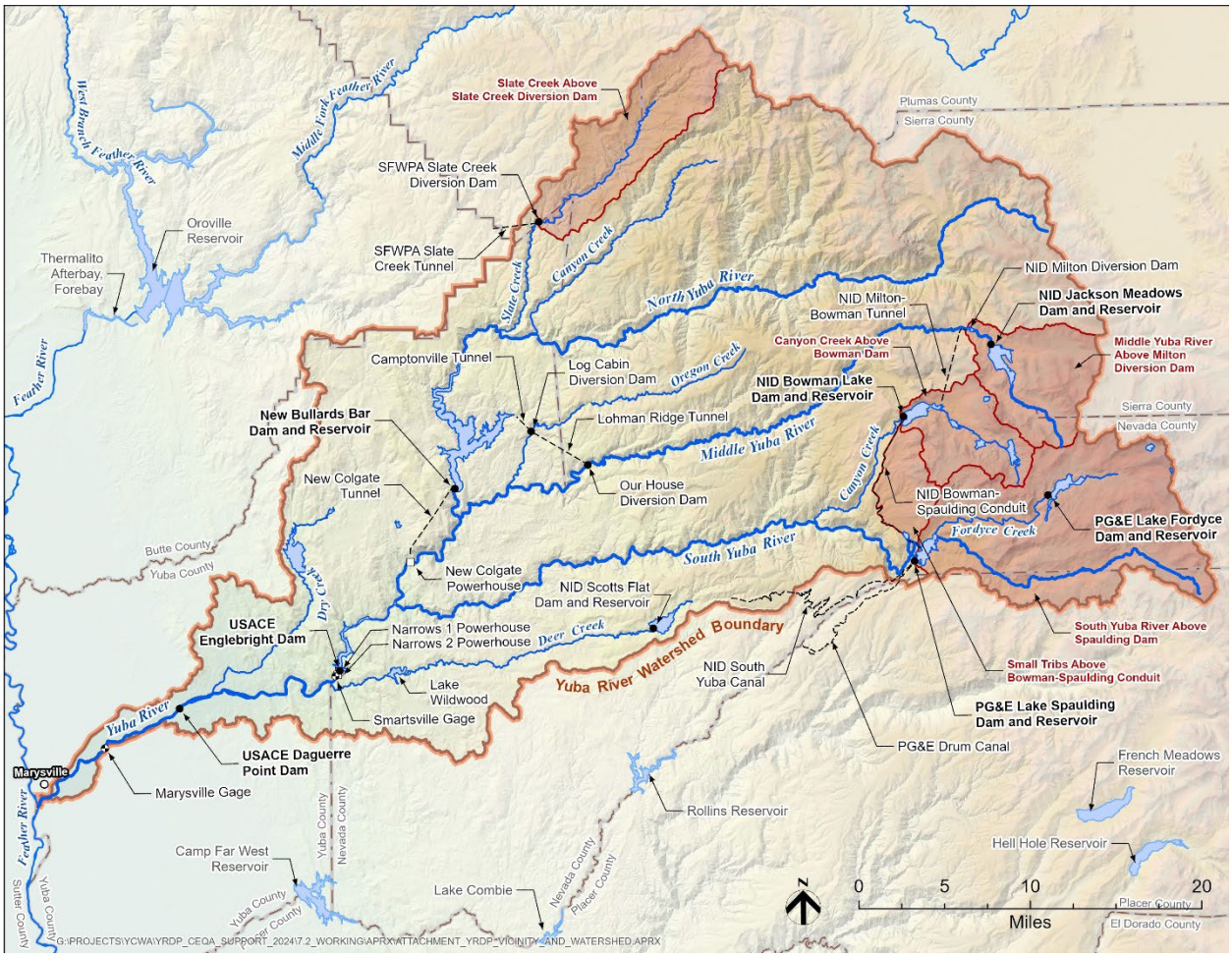

Figure 5.2-1. The Yuba River Watershed and Major Infrastructure. Red areas denote portions of the watershed under other Agencies' regulation.

5.2.1 Areas Upstream of Englebright Dam

The following section describes Yuba River surface water resources upstream from Englebright Dam, including on the North, Middle, and South Yuba rivers, Oregon and Slate creeks, and New Bullards Bar Dam and Reservoir.

5.2.1.1 Surface Water Hydrology

Upstream of Englebright Dam are the North, Middle, and South Yuba rivers, and Slate and Oregon creeks. Each tributary is described below.

5.2.1.1.1 North Yuba River

The upper extent of the North Yuba River is at Yuba Pass (elevation 6,701 feet msl) near State Route (SR) 49 in Sierra County. The river flows parallel to SR 49 as far as Downieville, where it diverges from the highway and flows westward into Yuba Water's New Bullards Bar Reservoir. The North Yuba River terminates at its confluence with the Middle Yuba River, approximately 2 miles downstream from New Bullards Bar Dam, at which point the combined flow of the two

rivers becomes the Yuba River. The total area of the North Yuba River watershed is approximately 491 square miles and includes portions of Yuba, Sierra, and Plumas counties. The record of daily flow data from the primary gage in the watershed, Goodyears Bar (USGS Gage 11413000) at approximately 2,453 feet msl, extends from October 1, 1930 through the present and represents drainage from a watershed area of approximately 250 square miles. There are no impairments on the North Yuba River above Goodyears Bar that substantially affect river flow.

The North Yuba River subbasin is a predominantly snowmelt-fed stream, with peak flows occurring from March through May. On a long-term average basis, North Yuba River flows are lowest from August through October. Canyon Creek, an ungaged tributary to the North Yuba River, with a subbasin of approximately 61 square miles, flows into the North Yuba River approximately 8 miles downstream from Goodyears Bar. Similar to the North Yuba River subbasin above Goodyears Bar, the Canyon Creek subbasin is predominantly snowmelt-fed and has no upstream impairments.

5.2.1.1.2 Slate Creek

Slate Creek originates near the town of La Porte, in the northern portion of the Yuba River watershed. The Slate Creek subbasin is approximately 61 square miles. The South Feather Water and Power Agency (SFWPA) diverts flows from Slate Creek into the Feather River Basin near Strawberry Valley via the Slate Creek Tunnel at approximately 3,500 feet msl as part of their South Feather Power Project (FERC Project 2088-068). Approximately 49 square miles of the Slate Creek subbasin is above the Slate Creek Tunnel. The Slate Creek Tunnel has a maximum capacity of 848 cubic feet per second (cfs), and its flow has been measured at USGS Gage 11413250 since October 1, 1962. Slate Creek joins the North Yuba River approximately 0.5 miles upstream from the normal high-water mark of NBB and approximately 12 miles below the Goodyears Bar gage. Slate Creek flows have been continuously gaged below the Slate Creek Tunnel by USGS Gage 11413300 since October 1, 1960.

5.2.1.1.3 Middle Yuba River

Flows in the Middle Yuba originate from snowmelt and rainfall runoffs above the largest upper watershed impoundment, NID's Yuba-Bear Project's (FERC Project No. 2266) Jackson Meadows Reservoir, with a dam crest of elevation 6,044.5 feet msl, in Sierra County. NID's Milton Diversion Dam, located just downstream from Jackson Meadows Dam at river mile 44.4, diverts a portion of the Middle Yuba River flow into the Milton-Bowman Tunnel, which discharges in Bowman Reservoir in the South Yuba Watershed. Below the Milton Diversion Dam, most of the upper Middle Yuba River is confined by narrow, steep canyons which continue downstream to Yuba Water's 75-foot-high Our House Diversion Dam, the upper extent of the YRDP on the Middle Yuba River, located southwest of Camptonville near the Sierra/Nevada County line. A portion of the Middle Yuba River's flow can be diverted into Yuba Water's Lohman Ridge Tunnel at the Our House Diversion Dam. Approximately 12 miles below Our House Diversion Dam, the Middle Yuba River joins the North Yuba River to form the Yuba River.

5.2.1.1.4 Oregon Creek

Oregon Creek is entirely contained within the Middle Yuba River watershed and originates near elevation 4,455 feet msl. Yuba Water's Log Cabin Diversion Dam, a 55-foot-high dam, diverts flows from Oregon Creek to NBB through Yuba Water's Camptonville Tunnel. Yuba Water's Log Cabin Diversion Dam is approximately 4 miles upstream from Oregon Creek's confluence with the Middle Yuba River. Oregon Creek flow above the Log Cabin Diversion Dam is a combination of outflow from the Lohman Ridge Tunnel, originating at Our House Dam on the Middle Yuba River, and Oregon Creek flow. Above the outfall of the Lohman Ridge Tunnel, Oregon Creek is free of impairments. Of the approximately 35 square miles of the Oregon Creek watershed, about 6 square miles lie below Log Cabin Dam.

5.2.1.1.5 South Yuba River

The headwaters of the South Yuba River originate at elevation of 9,000 feet msl in Placer County near Castle Peak and Donner Lake. The South Yuba River is subject to multiple upstream impairments before it joins the Yuba River in Englebright Reservoir. Primary upstream impairments are NID's Yuba-Bear Project, and PG&E's Drum-Spaulding Project (FERC Project No. 2310). A portion of Canyon Creek flow, including inflow from the Milton Bowman-Tunnel, are diverted from NID's Bowman Reservoir, located at river mile 10.4 on Canyon Creek, through the Bowman-Spaulding Tunnel to PG&E's Lake Spaulding at river mile 40.8 on the South Yuba River. Releases from Lake Spaulding are diverted into the Bear and American river basins via the Drum Canal and South Yuba Canal.

Diversions from the Drum and South Yuba canals provide water supply to NID and Placer County Water Agency[1] (PCWA) customers. In addition to water supplies from the Yuba River watershed, NID water users receive water supplies from the Bear River and Deer Creek under NID water rights and a contract with PG&E[2] (NID 2021). In addition to purchases from PG&E, PCWA water users receive water supplies from PCWA's Middle Fork Project (FERC Project 2079) and groundwater.

Remaining South Yuba River flow below Spaulding Dam combines with remaining Canyon Creek flow, and joins the Yuba River in Englebright Reservoir 32.4 miles downstream from the Canyon Creek-South Yuba River confluence. Flows on the lower South Yuba River have been continuously measured at Jones Bar gage (USGS Gage 11417500), located approximately 7 miles upstream from the confluence of the Yuba River and South Yuba River, since April 1, 1959. Of the approximately 352-square-mile South Yuba River watershed, approximately 42 square miles lie below Jones Bar gage.

[1] Placer County Water Agency has two water supply contracts that allow for purchase of up to 125,400 acre-feet of water annually from PG&E: 100,400 ac-ft annually for Zone 1, and 25,000 ac-ft for Zone 3 (PCWA 2006);

[2] NID has a water purchase contract with PG&E to purchase up to 54,361 AF, however purchase is only available in monthly allotments in which many of the months are during the winter. For planning purposes, NID assumes 7,500 AF is available on an average basis.

5.2.1.2 Reservoirs

5.2.1.2.1 New Bullards Bar Reservoir

New Bullards Bar Reservoir is the principal storage facility for the YRDP. The reservoir has a gross storage capacity of 966,103 ac-ft (i.e., storage at the normal maximum water surface elevation) and a regulatory minimum pool of 1,730 ft, as required by Yuba Water's FERC license, which equates to a storage of approximately 230,000 ac-ft. Thus, the reservoir's operable capacity is 736,103 ac-ft. This is not to be confused with usable storage, which is 961,103 ac-ft, and is the volume of water in the reservoir between NMWSE and the elevation of the invert of the 72-inch hollow jet low level outlet (i.e., El. 1,395 ft). A portion of the operable capacity - 170,000 ac-ft - must be held empty from November 1 through March 31 for flood management; the full pool of the reservoir is available for storage between June 1 and September 15. The required storage volume is linearly interpolated between these two quantities on other dates.

Releases from New Bullards Bar Reservoir are made through the New Colgate Power Tunnel to the New Colgate Powerhouse on the Yuba River; the New Bullards Bar Minimum Flow Powerhouse at the base of the dam; the dam's low level outlet; or the gated spillway. The New Colgate Power Tunnel is approximately 5.2 mi long and has a maximum flow capacity of 3,400 cfs. The New Bullards Bar Minimum Flow Powerhouse has a maximum flow capacity of 5 cfs. The low-level outlet at the base of New Bullards Bar Dam has a maximum capacity of 1,250 cfs with an invert elevation of 1,395 ft, but it is rarely used. The New Bullards Bar Dam Spillway has a crest elevation of 1,902 ft and a maximum capacity of 124,000 cfs at full pool. Minimum flow on the North Yuba River downstream of New Bullards Bar Dam is met through a combination of releases from the New Bullards Bar Minimum Flow Powerhouse and seepage from the New Bullards Bar Dam. Any additional non-spill releases are made through the New Colgate Powerhouse. The spillway is only used during flood management operations.

New Bullards Bar Reservoir typically reaches its usable storage capacity of 966,103 acre-feet at the end of the spring runoff season and is gradually drawn down to its minimum operating elevation of 1,730 feet in early to mid-winter. The reservoir does not undergo significant daily changes in elevation. Historical storage in New Bullards Bar Reservoir has been recorded at the New Bullards Bar Reservoir gage (USGS 11413515) from January 14, 1969 through September 30, 2023. Yuba Water typically manages New Bullards Bar Reservoir storage to balance flows in the Yuba River below Englebright Reservoir for fisheries benefits while maintaining storage in case of a subsequent year drought. Table 5.2-1 shows generalized end-of-month target storages based on discussions with YRDP operators for New Bullards Bar Reservoir.

Table 5.2-1. General End-of-Month New Bullards Bar Reservoir Target Storages.

Location	Average[1] End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
New Bullards Bar Reservoir[2]	750	750	750	780	780	790	890	966	966	845	735	650

5.2.1.2.2 Englebright Reservoir

USACE's 260-ft-high Englebright Dam was constructed by the United States in 1941 at Yuba River RM 24.0, forming Englebright Reservoir to trap sediment derived from hydraulic mining operations in the Yuba River watershed. USACE's Englebright Reservoir is about 9 miles long and has a gross storage capacity of about 70,000 acre-feet. In addition to its role as a debris-management structure, Englebright Reservoir functions as an afterbay for the New Colgate Powerhouse; releases to the Yuba River below Englebright Dam are held relatively consistent, while storage in Englebright Reservoir fluctuates according to New Colgate Powerhouse releases. Inflow to Englebright Reservoir comes from multiple sources: releases from the New Colgate Powerhouse, releases from New Bullards Bar Dam, releases from Our House and Log Cabin diversion dams, inflow from the South Yuba River, and local inflows to Oregon Creek and the Middle Yuba, North Yuba, and Yuba rivers downstream from the upstream impairments.

Englebright Reservoir elevations are held above 516 feet above mean sea level according to an agreement with local marina operators. Englebright Dam has a passive spillway at 527.0 feet above mean sea level. There is approximately 7,000 acre-feet of storage between 516 feet and 527 feet above mean sea level. As a result of normal Yuba Water operations, Englebright Reservoir water surface levels generally are between approximately 517 feet above mean sea level and 523 feet above mean sea level, but levels can fluctuate according to inflows. For analytical purposes, Yuba Water used a target elevation of 519 feet above mean sea level to define normal Englebright Reservoir water surface elevation.

5.2.1.3 Water Quantity & Historical Delivery

The Nevada Irrigation District and PG&E export approximately 410,000 acre-feet per year from the Yuba River Basin to the Bear River and American River Basins (NMFS 2012). This is sourced from the Middle Yuba and South Yuba Rivers and associated diversion facilities which have a total storage capacity of 307,000 acre-feet. In addition, the South Feather Water and Power Agency exports an average of about 70,000 acre-feet per year from Slate Creek (a tributary to the North Yuba River) to the Feather River Basin. While these upper basins lie outside the Project Area, their operations can significantly reduce the water supply available to the Proposed Projects, particularly during dry and critically dry water years.

Within the Project Area above Englebright Dam, Yuba Water pumps an average of 6 acre-feet per year from New Bullards Bar Reservoir to supply water to the Cottage Creek Treatment Plant for domestic and recreational uses adjacent to the reservoir. Diversions downstream are discussed below.

Although the area on the west side of the New Bullards Bar Reservoir and North Yuba River is located within the boundaries of the North Yuba Water District, the North Yuba Water District obtains most of its water supply from the South Fork Feather River Project and does not divert adjacent to the YRDP site.

5.2.1.4 Flood Management

The Yuba River upstream of the Englebright Dam is mapped by FEMA[3] as flood Zone A (areas with a 1% annual chance of flooding). Similarly, the South Yuba River is also mapped as being Zone A. Upstream of the junction with the Dobbins Creek, the Yuba River is mapped as being Zone X (areas outside of the 0.2% annual chance flood). The flood risk along the Middle Yuba River has not been determined.

According to the USACE National Levee Database, there are no Federal levees upstream of the Englebright Dam.[4] In the event of a spillway failure on the New Bullards Bar Dam, the North Yuba River and downstream communities are identified as being in the "Extremely High" downstream inundation hazard zone.[5]

The Middle and South Yuba Rivers are virtually unprotected by flood control systems.

New Bullards Bar Reservoir acts as the main flood control facility for the Yuba River watershed with 170,000 acre-feet of usable capacity held in reserve for flood storage from October through April. The reservoir controls about half of the flood flows of the Yuba River watershed, with the remainder of the runoff left largely uncontrolled. In accordance with a contract between Yuba Water and the USACE, a portion of the usable capacity, 170,000 acre-feet, must be available for flood management from November 1 through March 31, with lesser amounts of flood storage required during September, April, and May. The seasonal flood storage space allocation schedule is presented in Table 5.2-2.

Table 5.2-2. New Bullards Bar Reservoir Flood Reservation Storage.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
End of Month Storage Allocation (TAF)	170	170	170	170	170	170	70	0	0	0	0	56
End of Month Maximum Allowable Storage (TAF)	796	796	796	796	796	796	896	966	966	966	966	910

Source: United States Army Corps of Engineers, New Bullards Bar Reservoir, Reservoir Regulation for Flood Control, June 1972
Key: TAF = Thousands of acre-feet

In addition to reservation of flood control space in New Bullards Bar Reservoir, flood management regulations include rules governing ramping rates as well as target maximum flows in the Yuba River and the Feather River below the confluence with the Yuba River (USACE 1970; USACE 1972). New Bullards Bar Reservoir is operated for the following maximum flows:

- 50,000 cfs on the North Yuba River below New Bullards Bar Dam
- 120,000 cfs on the Yuba River at Marysville
- 300,000 cfs on the Feather River below the Yuba River
- 320,000 cfs on the Feather River below the Bear River

[3] FEMA Flood Map Service Center. Accessed October 2024. FEMA Flood Map Service Center | Search By Address
[4] National Levee Database. Map View. Accessed October 2024. National Levee Database (army.mil)
[5] Dam Breach Inundation Map. Accessed October 2024. Dam Breach Inundation Map Web Publisher (ca.gov)

Releases from New Bullards Bar Reservoir are made through the New Colgate Powerhouse on the Yuba River, the New Bullards Bar Minimum Flow Powerhouse at the base of the dam, a low-level outlet at the base of the dam, and/or the gated spillway. Based on Yuba Water operational records, New Bullards Bar Dam has historically spilled in 29 out of the last 54 water years between 1970 and 2023. Historically, peak monthly spill volumes have occurred in January 1970 (410 TAF), February 1986 (406 TAF), January 1997 (577 TAF) and February 2017 (621 TAF). The maximum daily average spill of 53,633 cfs occurred on January 2, 1997.

Yuba Water is pursuing the addition of an Atmospheric River Control Spillway (ARC Spillway) at New Bullards Bar Dam that would allow for increased spill releases from New Bullards Bar Reservoir at lower elevations. The proposed ARC Spillway is described and analyzed in detail in a separate EIR by Yuba Water (State Clearinghouse No. 2020110163).[6]

5.2.2 Lower Yuba River

The following section describes surface water resources on the Yuba River downstream from Englebright Dam, also known as the lower Yuba River, to its confluence with the Feather River.

5.2.2.1 Surface Water Hydrology

The Lower Yuba River extends 24.3 miles from Englebright Dam to the river's confluence with the Feather River, which flows into the Sacramento River, and then subsequently flows into the Sacramento - San Joaquin River Delta. Deer Creek (RM 23.4) and Dry Creek (RM 13.9) contribute flow to the lower Yuba River draining areas of 89 square miles and 108 square miles, respectively. Diversions for irrigation throughout this portion of the Yuba River are common. The Yuba River at its confluence with the Feather River has a drainage area of 1,339 square miles.

USGS gage 11418000 (Yuba River below Englebright Dam near Smartsville, California) captures a drainage area of 1,108 square miles. The gage measures flow in the Yuba River downstream from both the Narrows 1 and Narrows 2 Powerhouses, described in detail in Chapter 2, which are located immediately downstream of the Englebright Dam, and includes both spills from the dam and powerhouse releases. USGS gage 11421000 (Yuba River near Marysville, California), is located 6.2 miles upstream from the Yuba River's confluence with the Feather River and captures a drainage area of 1,339 square miles.

5.2.2.2 Reservoirs and Impoundments

Flows on the Yuba River are restricted by Daguerre Point Dam, constructed by the United States in 1906 downstream of Englebright Dam at RM 11.6 to prevent hydraulic mining debris from the Yuba River watershed from flowing into the Feather and Sacramento rivers downstream. This dam is only 25 feet high and has no appreciable storage capacity. Daguerre Point Dam provides elevation control for diversion into the Hallwood-Cordua Canal on the north side of the dam, and

[6] The analysis of ARC Spillway operations from the ARC Spillway EIR is incorporated by reference and is available at https://www.yubawater.org/252/ARC-Spillway-at-New-Bullards-Bar-Dam . The ARC Spillway EIR found that operation of the ARC Spillway would not result in any unmitigated significant impacts to surface water resources, and would have a beneficial impact related to reservoir storage, downstream flows, and flood risk. While the ARC Spillway EIR evaluated ARC Spillway operations under Yuba Water's existing FERC license for the YRDP, those operations would not significantly change under a new FERC license. As a result, ARC Spillway operations under the Proposed Projects would not have new or worse impacts compared to those previously disclosed in the ARC Spillway EIR.

the Yuba Main Canal on the south side. There are existing fish ladders on each end. Yuba Water is pursuing a Nature-Like Fishway that would replace the south fish ladder and the diversion structure for the Yuba Main Canal.

5.2.2.3 Water Quantity & Historical Delivery

Yuba Water is a major water-right holder on the Yuba River. Yuba Water holds pre-1914 appropriative rights dating from 1897 and post-1914 appropriative water rights confirmed by water-right licenses. Yuba Water diverts water for consumptive uses under several permits that authorize direct diversion up to a total rate of 1,593 cfs from the lower Yuba River from September 1 to June 30 for irrigation and other uses, and up to 1,250,000 ac-ft from October 1 to June 30 to storage in the New Bullards Bar Reservoir[7]. In most years, water supply for irrigation after June 30 is provided from storage.

As described in Section 2.4.3.3.4, eight water districts, irrigation districts, and mutual water companies, also known as member units, have water supply contracts with Yuba Water for delivery of water. Figure 5.2-2 shows a map of Yuba Water's member units' service areas.

[7] Yuba Water Agency. Yuba County Integrated Regional Water Management Plan. Accessed October 2024. CONTENTS (yubawater.org)

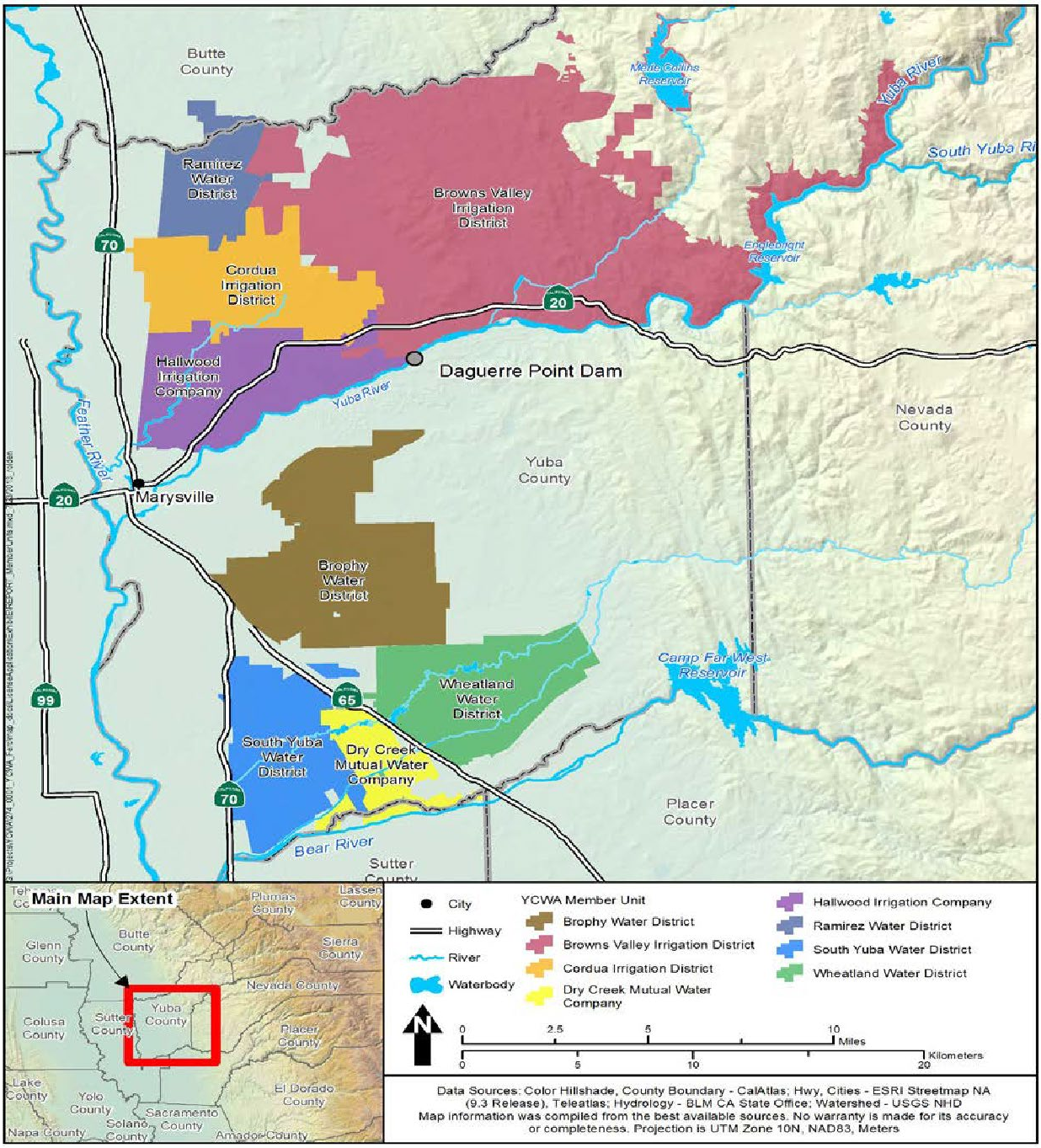

Figure 5.2-2. Yuba Water's Member Unit service areas.

In 2016, new agreements were signed that changed some of the volumes, timing, and conditions for providing water supplies from the YRDP. Yuba Water provides water supplies under Yuba Water's consumptive-use water-right permits to its eight Member Units. The places of water delivery to Yuba Water's Member Units are listed in Table 5.2-3.

Table 5.2-3. Yuba Water's Annual Contract Amounts and Place of Delivery.

Member Unit	Water Right Based Supply (acre-feet)	Project Based Supply (acre-feet)	Total Contract (acre-feet)
Browns Valley Irrigation District Pumpline Diversion Facility[1]			
Browns Valley Irrigation District	24,505	9,500	34,005
Yuba Main Canal[2]			
Brophy Water District	--	86,870	86,870
South Yuba Water District	--	54,307	54,307
Dry Creek Mutual Water Company	--	17,751	17,751
Wheatland Water District	--	40,230	40,230
Hallwood-Cordua Canal[3]			
Cordua Irrigation District	60,000	24,000	84,000
Hallwood Irrigation Company	78,000	11,208	89,208
Ramirez Water District	--	30,389	30,389
Total	162,505	274,255	436,760

[1] BVID receives water at the Pumpline Diversion Facility, located 1 mile upstream of United States Army Corps of Engineers' (USACE) Daguerre Point Dam.

[2] BWD, SYWD, DCMWC and WWD receive water from the Yuba Main Canal (South Canal), which begins on the south side of the Yuba River slightly upstream of the south abutment of USACE's Daguerre Point Dam.

[3] CID, HIC and RWD receive water through the Hallwood-Cordua Canal (North Canal), located on the north abutment of USACE's Daguerre Point Dam.

Browns Valley Irrigation District (BVID), Cordua Irrigation District (CID), and Hallwood Irrigation Company (HIC) have their own water rights on the Yuba River. Under water supply agreements with Yuba Water, CID and HIC receive surface water supplies as part of YRDP operations that are based on these Member Units' water rights. All eight of the Member Units receive some of their water as contracted supplies that are based on Yuba Water's water rights. Dry year deficiency criteria in BVID, CID, and HIC contracts are different from the deficiency criteria in Yuba Water's contracts with other Member Units. Provisions in Yuba Water's water supply agreements preclude deficiencies in water-right based supplies unless DWR April forecast of unimpaired runoff as measured at the Smartsville Gage is less than 40 percent of average. Contract shortage provisions are presented in Table 5.2-4.

Table 5.2-4. Yuba Water's water supply contract shortage provisions.

Category	Unimpaired Runoff Forecast (f) [1]	Percentage of Water Supply/ Contract Allocation Available[2]
PRE-1914 RIGHTS AGREEMENTS		
Browns Valley Irrigation District[3]	All	100%
Cordua Irrigation District	$f \geq 40\%$	100%
Hallwood Irrigation Company	$f < 40\%$	80%
YUBA WATER SUPPLY CONTRACTS		
Base Project Water for Other Member Units	f > 85%	100%
	$40\% \leq f \leq 85\%$	75%
	$f < 40\%$	50%

[1] April 1 DWR forecast of unimpaired Yuba River runoff near Smartsville in percentage of 50-year average.

[2] Based on water availability; if insufficient water is available for delivery, contract allocations could be lower than listed values.

[3] When the unimpaired runoff forecast is less than 40%, BVID's water rights give it the first 47.2 cfs of North Yuba River flow.

Current agricultural surface water supply demand includes only lands irrigable by existing infrastructure, demand in below normal, dry, and critical years is approximately 305 TAF, 145 TAF of which is for pre-1914 water right holders, and 160 TAF of which is for Yuba Water Supply Contract holders; demand in wet and above normal years, when precipitation contributes more for irrigation water supply, is estimated to be 291 TAF, 137 TAF of which is for pre-1914 water right holders, and 154 TAF of which is for Yuba Water Supply Contract holders. Historical cumulative annual surface water deliveries are shown in Figure 5.2-3.

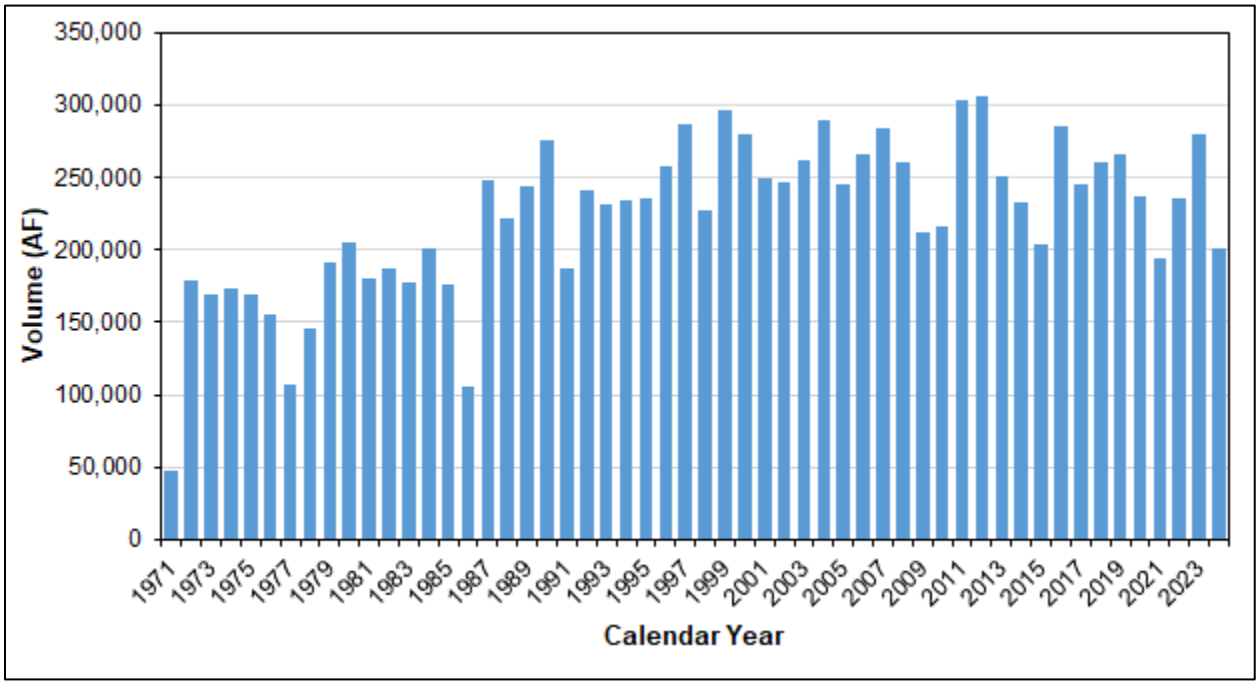

Figure 5.2-3. Historical Annual Yuba County Water Agency Member Unit Surface Water Deliveries.
Source: Yuba Water Surface Water Delivery Records

Since it began delivering water supply from the YRDP, Yuba Water has delivered full surface water supply requests to its contractors in all but four years: 2013, 2014, 2015, and 2021. These shortages have been due to hydrology reducing New Bullards Bar Reservoir storage below Yuba Water's end-of-September carryover storage threshold of 440,000 AF for the first year of a drought and 400,000 AF in subsequent drought years. Yuba Water imposes shortages to maintain storage in New Bullards Bar Reservoir for water supply in subsequent drought years. Approximate shortage volumes in those years are shown in Table 5.2-5.

Table 5.2-5. Estimated Historical Annual Member Unit Surface Water Delivery Shortage Volumes.

Calendar Year	Estimated Surface Water Shortage Volume (AF)
2013	14,500
2014	5,500
2015	55,000
2021	80,000

Notes:
[1] Period of Record: 10/1/1969 through 9/30/2023
[2] Yuba Water Operations Records
Key: AF = Acre-feet

In case of shortages, the member units effectively have three options: (1) pump groundwater to replace the reduction in surface water; (2) fallow land; or (3) do a combination of groundwater pumping and land fallowing. The decision about which of these options to take is made by individual farmers based on a multitude of factors including the value of the crop, the cost of groundwater pumping, and the availability of groundwater.

5.2.2.4 Flood Management

Both structural and non-structural elements are used to manage flood risk in Yuba County. Structural elements include upstream reservoirs with active flood control space, levees along major watercourses, flood channels, and drainage facilities that pump interior runoff and seepage into the flood control channels. Non-structural elements address the components of risk that cannot be mitigated through structural elements. These include public education, forecasting and warning systems, development regulation and management, reservoir operations, emergency operations, and other activities. A description of structural elements in Yuba County's flood risk management system are described below.

5.2.2.4.1 Structural Elements

Yuba County's flood management system is part of a much larger system of multi-purpose reservoirs, leveed stream channels, weirs, and overflow structures constructed to reduce flooding in the Sacramento Valley over the past 170 years. Together, these facilities comprise the State Plan of Flood Control (SPFC) for the Sacramento River Basin. Structural elements specific to the Yuba River below Englebright Dam include levees and training walls, both of which are described below.

Levees

Levees provide structural flood risk reduction to communities in the southwestern portion of Yuba County, which lies within the Central Valley. The SPFC levees along the Yuba River are described in Table 5.2-6

Table 5.2-6. SPFC Levees along the Yuba River.

LMA	System/ Unit	Location	Length (mi)
Marysville Ring Levee (City of Marysville)			
Marysville Levee Commission	Unit 3	Yuba River north bank	3.0
City of Marysville System 2			
Marysville Levee Commission, State	NE Extension	Yuba River north bank	1.8
Plumas Lakes Basin (Olivehurst, Linda, Arboga, Plumas Lake)			
RD 784	Unit 1	Yuba River south bank	2.2
	Unit 7	Yuba River south bank	3.8
	N/A	Goldfields Embankment*	2.5

Sources: USACE 2021; T. Engler, personal communication, January 22, 2022.
Notes:
*The Goldfields Embankment is not a federal project but will be incorporated into the SPFC upon completion.

Yuba River Training Walls

At the turn of the 20th century, cobble tailings were used to construct embankments along the lower Yuba River to confine flow and convey mining debris downstream. The Middle Training Wall is a two-mile long embankment that divides flow into the main channel of the Yuba River and a perennial side channel to the north; the North Training Wall runs along the north bank of the perennial side channel, and South Training Wall runs in parallel on the south bank of the Yuba River.

A substantial portion of the training walls' mass has eroded since their original construction, and they are subject to breaching. Yuba Water and the Three Rivers Levee Improvement Agency (TRLIA) recently partnered on a project to fix the North Training Wall geometry and erosion issues in order to secure 100-year accreditation from FEMA and provide improved protection to the community of Hallwood. The Middle Training Wall is no longer needed for flood control, and the Hallwood Side Channel and Floodplain Restoration Project, funded partially by Yuba Water and completed in 2023, removed large portions of the embankment to lower flood stages and to restore and enhance riparian floodplain habitat in the lower Yuba River downstream from Daguerre Point Dam.

5.2.2.5 Areas Downstream of the Yuba River

The following section describes surface water resources for potentially affected areas downstream from the Yuba River.

5.2.2.5.1 Water Supply

At its downstream end, the Yuba River flows into the Feather River near the cities of Marysville and Yuba City. The Feather River flows around 28 miles before it reaches its confluence with the Sacramento River near Verona. The Sacramento River flows 36 miles before it reaches Freeport, just south of Sacramento, and another 49 miles before flowing out into the San Francisco Bay. Agricultural and municipal water users take diversions from the Feather and Sacramento rivers, and the San Joaquin-Sacramento River Delta (Delta) at numerous points downstream from the Yuba River under water rights and contracts with the California Department of Water Resources'

(DWR) State Water Project (SWP) or with the U.S. Bureau of Reclamation's Central Valley Project (CVP).

Yuba Water transfers a portion of its releases to meet lower Yuba River minimum flows under the Yuba River Accord (Yuba Accord). Yuba Water has frequently transferred Yuba Accord water in this way since 2007. An extension of the Yuba Accord transfers is currently under SWRCB review.

The SWP and CVP have a shared responsibility for water quality, water level, and flow requirements in the Delta. The two projects have an agreement that details their respective responsibilities for meeting those requirements (DWR and Reclamation 2018), and how they can divide non-CVP and non-SWP flows, like those from the Yuba River. Any non-transferrable Yuba River outflow becomes subject to this agreement.

5.2.2.5.2 Flood Management

The Feather River downstream of its confluence with the Yuba River is mapped by FEMA as a Special Flood Hazard Area (Zone AE), with areas of the floodplain mapped as Zone X (areas with reduced flood risk due to levees). As identified in the USACE National Levee Database, there is an extensive network of levees along the Feather River both upstream and downstream of the Feather River-Yuba River confluence. Feather River levees downstream from the Yuba River are maintained by the Three Rivers Levee Improvement Agency (TRLIA) along the east bank and the Sutter-Butte Flood Control Agency (SBFCA) along the west bank.

As described below, New Bullards Bar Reservoir is operated cooperatively with the California Department of Water Resources' Oroville Reservoir to meet common flow objectives on the Feather River below the Yuba River and below the Bear River.

5.3 Regulatory Setting

Operations of the YRDP and the Narrows Project are regulated through a series of agreements, contracts, and laws. The primary focus of these regulations is water resource management operations subject to control by these various documents.

5.3.1 Federal Plans, Policies, Regulations, and Laws

5.3.1.1 Flood Control Act of 1944

The Flood Control Act of 1944 (P.L. 78–534) authorized the construction of numerous public works on rivers and harbors for flood control, and for other purposes. Per Section 7 of the Flood Control Act of 1944, the US Army Corps of Engineers (USACE) is responsible for prescribing regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided for those purposes.

5.3.1.2 USACE Water Control Manual

The USACE Master Manual of Reservoir Regulation, Sacramento River Basin, California (Master Manual), describes hydrologic and flood management conditions and systemwide operating procedures in the Sacramento River Basin in accordance with USACE Engineer Regulation 1110-

2-240 and Engineer Manual 1110-2-3600, which detail USACE responsibilities for prescribing flood control and navigation regulations for certain reservoir projects constructed or operated by other Federal, non-Federal, or private agencies.[8] Each major river in the region is governed by operating rules as described in various appendices to the Master Manual. Appendix V to the Master Manual governs operations at New Bullards Bar Dam and Reservoir. According to the Master Manual, New Bullards Bar Reservoir is required to maintain Yuba River flows at Marysville not to exceed 120,000 cfs (180,000 cfs when the Feather River is low) but limited to 50,000 cfs unless inflows during the current flood have exceeded 50,000 cfs. If inflow to New Bullards Bar Reservoir has exceeded 50,000 cfs, water can be released at rates up to the maximum rate of inflow, given that downstream flow criteria are met.[9] The USACE and Yuba Water are currently reviewing and updating the New Bullards Bar Dam and Reservoir Water Control Manual.

5.3.1.3 FERC License No. 1403 for the Narrows Project

The Narrows 1 Powerhouse is part of the Narrows 1 Project, a hydroelectric project operated by Yuba Water pursuant to License No. 1403 issued by FERC. While the existing Narrows 1 FERC license includes flow requirements in the Yuba River downstream from Englebright Dam, those flow requirements are less than those required by the Yuba Accord, and as a result do not affect operations. As previously discussed, Narrows 1 Powerhouse operations are coordinated with the Narrows 2 Powerhouse to meet Yuba Water flow and water supply obligations in the Yuba River downstream from Englebright Dam.

5.3.1.4 FERC License No. 2246 for the Yuba River Development Project

The New Bullards Bar Dam and Reservoir are part of the YRDP, a hydroelectric project operated by Yuba Water pursuant to License No. 2246 issued by FERC.

The FERC license states requirements for operation of the YRDP under a series of articles which govern all aspects of the construction, operation, maintenance, and access to the project. Article 6 requires Yuba Water to construct and operate a series of stream gages to monitor and regulate water flow diverted for the operation of the YRDP works, the amount of water held in and withdrawn from reservoir storage, and the effective head (pressure) on the power-generating turbines. Article 33 includes minimum streamflow schedules for maintenance of fish life in several locations. Required flows on the Middle Yuba River, Oregon Creek, and North Yuba River from Article 33 are shown in Table 5.3-1.

[8] U.S. Army Corps of Engineers (USACE). 1959 (March) Master Manual of Reservoir Regulation, Sacramento River Basin, California; 2016 (May) Engineer Regulation 1110-2-240, Engineering and Design WATER CONTROL MANAGEMENT; and EM 1110-2-3600, Management of Water Control Systems. USACE Publications - Engineer Regulations (army.mil)

[9] U.S. Army Corps of Engineers (USACE). 1959 (March) Master Manual of Reservoir Regulation, Sacramento River Basin, California; and 1972 (June) Reservoir Regulation for Flood Control, New Bullards Bar Reservoir, North Yuba River, California. Appendix V to Master Manual of Reservoir Regulation, Sacramento River Basin, California.

Table 5.3-1. Article 33 Existing FERC-Required Flows on the Middle Yuba River, Oregon Creek, and North Yuba River.

Stream	Flow (cfs)[1,2]	
	April 15 to June 15	June 16 to April 14
Middle Yuba (downstream of Hour House Diversion)	50	30
Oregon Creek (downstream of Log Cabin Diversion)	12	8
North Yuba (downstream of New Colgate Diversion)	5	5

[1] Or natural flow, whichever is less. Maximum 24-hour fluctuations of plus or minus 10 percent are permitted for flows in Middle Yuba downstream of Hour House Diversion and in Oregon Creek downstream of Log Cabin Diversion.

[2] Water releases shall be subject to the following reduction in any critical dry year, defined as a water year for which the April 1 forecast of the California Department of Water Resources predicts that streamflow in the Yuba River at Smartsville be 50 percent or less of normal: 50% or normal allows for 15% reduction in releases; 45% of normal allows for 20% reduction; 40% or less allows for 30% reduction

Article 33 also includes flow requirements on the Yuba River downstream from Englebright Dam. Table 5.3-2 shows Article 33-required flows by month on the Yuba River downstream from Englebright Dam.

Table 5.3-2. Article 33 Existing FERC-Required Flows on the Yuba River downstream from Englebright Dam.

Period	Flow Below Englebright Dam (cfs)[1,2]	Flow Below Daguerre Point Dam (cfs)[3]
October 1-October 15	0	400
October 16-October 31	600-1,050	400
November 1-November 30	600-700	400
December 1-December 31	600-1,400	400
January 1-January 15	1,000-1,850	245
January 16-March 31	600	245
April 1- June 30	0	245
July 1-September 30	0	70

Notes:

[1] Variations from this schedule are permissible during emergencies, uncontrollable flood flows, and critical dry year curtailments.

[2] With the exception of emergencies, releases required by U.S. Army Corps of Engineers flood control criteria, releases required to maintain a flood control buffer or for other flood control purposes, bypasses of uncontrolled flows into Englebright Reservoir, uncontrolled spilling, or uncontrolled flows of tributary streams downstream of Englebright Dam, Licensee shall make reasonable efforts to operate New Bullards Bar Reservoir and Englebright Reservoir to avoid fluctuations in the flow of the lower Yuba River downstream of Englebright Dam, and daily changes in project operations affecting releases or bypasses of flow from Englebright Dam shall be continuously measured at the United States Geological Survey gage at Smartsville, and shall be made in accordance with the following conditions:

i. Project releases or bypasses that increase streamflow downstream of Englebright Dam shall not exceed a rate of change of more than 500 cubic feet per second (cfs) per hour.

ii. Project releases or bypasses that reduce streamflow downstream of Englebright Dam shall be gradual and, over the course of any 24-hour period, shall not be reduced below 70 percent of the prior day's average flow release or bypass flow.

iii. Once the daily project release or bypass level is achieved, fluctuations in the streamflow level downstream of Englebright Dam due to changes in project operations shall not vary up or down by more than 15 percent of the average daily flow.

iv. During the period from September 15 to October 31, the licensee shall not reduce the flow downstream of Englebright Dam to less than 55 percent of the maximum five-day average release or bypass level that has occurred during that September 15 to October 31 period or the minimum streamflow requirement that would otherwise apply, whichever is greater.

v. During the period from November 1 to March 31, the licensee shall not reduce the flow downstream of Englebright Dam to less than the minimum streamflow release or bypass established under (iv) above; or 65 percent of the maximum five-day average flow release or bypass that has occurred during that November 1 to March 31 period; or the minimum streamflow requirement that would otherwise apply, whichever is greater.

[3] Water releases shall be subject to the following reduction in any critical dry year, defined as a water yar for which the April 1 forecast of the California Department of Water Resources predicts that streamflow in the Yuba River at Smartsville be 50 percent or less of normal: 50% or normal allows for 15% reduction in releases; 45% of normal allows for 20% reduction; 40% or less allows for 30% reduction. However, in no event shall releases for fish life below Daguerre Point Dam be reduced to less than 70 cfs. The critical dry year provisions herein shall be effective from the time the aforesaid forecast is available until the April 1 forecast of the following year.

Article 34 specifies that the minimum pool for New Bullards Bar Reservoir is at elevation 1,730 feet, corresponding to approximately 230,000 acre-feet of storage. Article 46 specifies that Yuba Water would follow the USACE New Bullards Bar Dam and Reservoir Water Control Manual, described above.

5.3.1.5 FEMA National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) conducts mapping of flood zones and levee certifications to support the National Flood Insurance Program. Areas mapped into certain flood zones may be eligible for flood insurance. FEMA-mapped flood hazard areas and levee certifications also affect flood repair reimbursement for post-disaster relief and repairs.

5.3.1.6 PL 84-99.

Public Law (PL) 84-99 (1955) authorized the USACE Rehabilitation and Inspection Program (RIP) for federal flood control works, among other programs. Although PL 84-99 is voluntary, it is desirable for State Plan of Flood Control (SPFC) levees to meet PL 84-99 design and O&M standards in order to maintain eligibility for federal funding for repairs after a qualifying flood event. To remain active in the program, levees must be maintained to meet certain geometry and O&M standards and pass rigorous USACE inspections. Unacceptable encroachments, vegetation, geometry, or maintenance regimes may result in an "Unacceptable" overall system rating and inactive status. Levee systems with inactive status are not eligible for rehabilitation assistance under PL 84-99. USACE allows Local Maintaining Agencies (LMAs) with "Unacceptable" system ratings to prepare Systemwide Improvement Framework (SWIF) plans in order to maintain PL 84-99 eligibility while planning and implementing repairs and improvements needed to correct unacceptable inspection items. LMAs must prepare a Letter of Intent (LOI) that is accepted by USACE prior to preparing a SWIF.

5.3.1.7 FEMA 100-Year Accreditation.

FEMA recognizes levee systems that protect against floods that have a one percent or greater chance of occurring each year (more commonly known as a 100-year flood). To be accredited, the levee must meet certain design criteria, including but not limited to three feet of freeboard above the flood stage of the 100-year flood (the base flood elevation or BFE) (44 C.F.R. Part 65.10). Accreditation also requires levee systems to have formal O&M plans that meet specified criteria. Accreditation is desirable because it removes leveed areas from the regulatory floodplain (except for areas of interior drainage flooding) such that property owners are no longer required to purchase and maintain flood insurance. Provisional accreditation may be granted to levees that formerly met accreditation standards, while FEMA is awaiting or processing compliance documentation. Landside areas protected by provisionally accredited levees (PAL) are also excluded from the regulatory floodplain.

5.3.2 State

5.3.2.1 1965 Yuba County Water Agency and California Department of Fish and Game Streamflow Release Agreement

Instream flow requirements for the Yuba Project were originally specified in the September 2, 1965 agreement between Yuba Water and the California Department of Fish and Game (CDFG). These requirements were later incorporated into the 1966 FERC license.

5.3.2.2 Lower Yuba River Accord in SWRCB Corrected Order Water Right 2008-0014)

In 2005, Yuba Water and 16 other interested parties signed memoranda of understanding that specify the terms of the Yuba Accord, a comprehensive, consensus-based program to protect and enhance aquatic habitat in the Yuba River downstream of Englebright Dam. Following environmental review, Yuba Water and parties executed the following four agreements in 2007, which together comprise the Yuba Accord: 1) the Lower Yuba River Fisheries Agreement, which specifies the Yuba Accord's lower Yuba River minimum streamflows and creates a detailed fisheries monitoring and evaluation program; 2) the Water Purchase Agreement, under which DWR purchases water from Yuba Water, some of which is provided by the Yuba Accord's minimum streamflows, for SWP and CVP contractors; 3) the Conjunctive Use Agreements with seven[10] of Yuba Water's member units, which specify the terms of the Yuba Accord's groundwater conjunctive-use program; and 4) amendments to the 1966 Power Purchase Contract between Yuba Water and PG&E. Since the expiration of the 1966 Power Purchase Contract and Yuba Water's subsequent acquisition of the Narrows Project, the amendments to Yuba Water's contract with PG&E are no longer relevant.

Yuba Water has been operating the YRDP to implement the Yuba Accord since 2006. The 2006, 2007, and early 2008 operations were under 1-year pilot programs that were approved by the SWRCB through its Orders Water Right (WR) 2006-0009, WR 2006-0010, WR 2007-0002 and WR 2007-0012-DWR. Since 2008, Yuba Water has been operating the YRDP to implement the Yuba Accord according to the authorizations and requirements in SWRCB Corrected Order WR 2008-0014 (SWRCB 2008).

The Yuba Accord includes a specific set of flow schedules for the Yuba River. The flow schedule that is in effect at any particular time is determined by the North Yuba Index (NYI), a hydrologic index that was developed as a part of the Yuba Accord. The flow schedules are listed in Table 5.3-3.

[10] Cordua Irrigation District was not originally a signatory to Conjunctive Use Agreement, but later signed the Conjunctive Use Agreement in January 2021.

Table 5.3-3. Yuba Accord flow schedules.

Schedule	Oct 1-15	Oct 16-30	Nov 1-30	Dec 1-31	Jan 1-31	Feb 1-29	Mar 1-31	Apr 1-15	Apr 16-30	May 1-15	May 16-31	Jun 1-15	Jun 16-30	Jul 1-31	Aug 1-31	Sep 1-30	Total Annual Vol. (ac-ft)
MARYSVILLE GAGE (cfs)																	
1	500	500	500	500	500	500	700	1,000	1,000	2,000	2,000	1,500	1,500	700	600	500	574,200
2	500	500	500	500	500	500	700	700	800	1,000	1,00	800	500	500	500	500	429,066
3	500	500	500	500	500	500	500	700	700	900	900	500	500	500	500	500	398,722
4	400	400	500	500	500	500	500	600	900	900	600	400	400	400	400	400	361, 944
5	400	400	500	500	500	500	500	500	600	600	400	400	400	400	400	400	334,818
6	350	350	350	350	350	350	350	350	500	500	400	300	150	150	150	350	232,155
Conference Year	400	400	400	400	245	245	245	245	245	245	245	245	245	70	70	70	173,843
SMARTSVILLE GAGE (cfs)																	
1	700	700	700	700	700	700	700	700	--	--	--	--	--	--	--	700	--
2	700	700	700	700	700	700	700	700	--	--	--	--	--	--	--	700	--
3	700	700	700	700	700	700	700	700	--	--	--	--	--	--	--	700	--
4	700	700	700	700	700	700	700	700	--	--	--	--	--	--	--	700	--
5	600	600	600	550	550	550	550	600	--	--	--	--	--	--	--	500	--
6	600	600	600	550	550	550	550	600	--	--	--	--	--	--	--	500	--
Conference Year	0	600	600	600	1000	600	600	0	--	--	--	--	--	--	--	--	--

Notes:
Marysville Gage flows represent average volumes for the specified period. Actual flows may vary from the indicated flows according to established criteria.
Compliance with the Yuba Accord flow schedules is measured by a 5-day running average of average daily streamflows; with instantaneous flows never less than 90 percent of the specified requirement. Instantaneous flows will not be less than the applicable requirement for more than 48 consecutive hours.
Marysville Gage Schedule 6 flows do not include an additional 30,000 acre-feet that State Water Resources Control Board Corrected Order Water Right 2008-0014 requires Yuba Water to make available through groundwater substitution pumping. These additional flows will be allocated during Schedule 6 years.

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The WY hydrologic classification for the Yuba River to determine the flow requirements of Yuba Water's water-right permits shall be based on the North Yuba Index. Determinations of a year's flow schedule year type shall be made in February, March, April, and May, and for any subsequent updates after the May forecast. Table 5.3-4 shows the North Yuba Index schedule year-types.

Table 5.3-4. North Yuba River Index Schedule Year Types.

Flow Schedule Year Type	North Yuba Index Value (thousand ac-ft)
Schedule 1	Greater than or equal to 1,400
Schedule 2	Greater than or equal to 1,040 and less than 1,400
Schedule 3	Greater than or equal to 920, and less than 1,040
Schedule 4	Greater than or equal to 820 and less than 920
Schedule 5	Greater than or equal to 693 and less than 820
Schedule 6	Greater than or equal to 500 and less than 693
Conference Year	Less than 500

During Conference Years, which are defined as years when the NYI is less than 500,000 ac-ft, and which are expected to occur approximately 1 percent of the time, Yuba Water is required: 1) to maintain minimum instream flows in the Yuba River at the levels specified in Article 33 of Yuba Water's existing FERC license without the reductions authorized by subsections (c) and (d) of that article; 2) to release any supplemental flows recommended by the Lower Yuba Accord River Management Team and approved by the SWRCB's Deputy Director for Water Rights or, if no such recommended flows are effective by April 11 of such a Conference Year, then to release any supplemental flows ordered by the SWRCB, after a hearing under California Code of Regulations, title 23, section 767; and 3) to limit total water supply diversions at Daguerre Point Dam to 250,000 ac-ft.

As part of the Yuba Accord, a portion of the Yuba River flow at Marysville is considered transferrable based on comparison against a hypothetical Baseline operation, defined in the Yuba Accord Water Purchase Agreement. Under the Yuba Accord, operations of the YRDP and Narrows Projects would be to meet required flows described in Table 5.3-3 above at the Marysville and Smartsville gages. If operations to meet required flows would result in an end-of-September New Bullards Bar Reservoir storage greater than 650,000 ac-ft, Yuba Water would increase releases from New Bullards Bar Reservoir in order to achieve an end-of-September storage of 650,000 acre-feet. Under the hypothetical Baseline operations, Yuba Water would operate according to the Interim minimum flow requirements stated in the SWRCB's Revised Decision –1644 (SWRCB 2003), which were in place at the time Yuba Accord implementation began, or an end-of-September storage of 705,000 acre-feet. Transferable flows are the difference between the Yuba Accord and Baseline operations.

In addition to Yuba Water's releases of water under the Yuba Accord described above, Yuba Accord water transfers can come from groundwater substitution transfers, where Yuba Water member units forgo surface water deliveries and pump groundwater instead. Historical transfers conducted under the Yuba Accord are presented in Table 5.3-5.

Table 5.3-5. Historical Yuba Water Transfers under the Yuba Accord (YCWA 2024a).

Year	WYT Sacramento Valley 40-30-30 Index	Buyer	Stored Water Transfer (ac-ft)	Groundwater Substitution Transfer (ac-ft)
2007	Dry	Yuba Accord Water Purchase Participants	125,000[1,2,3]	--
2008	Critical	Yuba Accord Water Purchase Participants	117,212[1]	48,875
2009	Dry	Yuba Accord Water Purchase Participants	91,100[1,2]	88,900[5]
2010	Below Normal	Yuba Accord Water Purchase Participants	74,179[1,2]	66,211
2011	Wet	None		
2012	Below Normal	Yuba Accord Water Purchase Participants	81,681[2]	--
2013	Dry	Yuba Accord Water Purchase Participants	112,544[1,2]	64,730[7]
2014	Critical	Yuba Accord Water Purchase Participants	104,663[1,2]	56,984[7]
2015	Critical	Yuba Accord Water Purchase Participants	59,131	30,000
2016	Below Normal	Yuba Accord Water Purchase Participants	60,000	--
2017	Wet	None		
2018	Below Normal	Yuba Accord Water Purchase Participants	76,576	16,411
2019	Wet	None		
2020	Dry	Yuba Accord Water Purchase Participants	43,538	77,000
2021	Critical	Yuba Accord Water Purchase Participants	130,090	--
2022	Critical	Yuba Accord Water Purchase Participants	15,077	62,400
2023	Wet	None		
2024	Above Normal	None		
		Total of Transfers	**1,035,728**	**511,511**
		Average of Transfers In Years with Transfers	**79,671**	**56,835**
		Average of Transfers in Dry and Critical Years	**109,494**	**72,942**

Notes:

[1] In 2007, 2008, 2009, 2010, 2012, 2013, 2014, and 2015 BVID transferred an additional 3,100 acre-feet to the Santa Clara Valley Water District through conservation.

[2] Transfers to the Yuba Accord Water Purchase Participants include 60,000 acre-feet of stored water for the Environmental Water Account (EWA).

[3] The 2007 transfer was under Yuba Accord Pilot Program. It also included 60,000 acre-feet of transfer to the EWA purchased in 2006.

[4] Sacramento Valley Index as defined in SWRCB RD-1641.

[5] In 2009, CID transferred an additional 8,322 acre-feet of groundwater substitution transfer to the DWR Drought Water Bank.

[6] In 2013, CID transferred an additional 7,774 acre-feet of groundwater substitution transfer to the DWR Drought Water Bank.

[7] In 2014, CID transferred an additional 1,976 acre-feet of groundwater substitution transfer to the DWR Drought Water Bank.

As stated above, Yuba Water has operated the YRDP in compliance with the Yuba Accord since 2006. Yuba Water has certified a supplemental EIR for an extension of the Yuba Accord water transfers, and is awaiting approval by the SWRCB. This transfer extension will not affect Yuba Water operations of the YRDP or Narrows Project.

5.3.2.3 Forecast-Coordinated Operations

Within the Yuba-Feather basin, there is a program called the Yuba-Feather Forecast-Coordinated Operations (F-CO) which formalizes the mechanism for exchange of information (hydrologic forecasts, as well as weather data and operation information) among DWR, Yuba Water, USACE, and the California-Nevada River Forecast Center (CNRFC) of the National Weather Service. With F-CO, forecasters provide estimates of inflow and downstream unregulated flows into the reservoirs, and, in turn, reservoir operators provide anticipated releases based on these flows. To

enhance the sharing of information among operating agencies, and with the cooperation of all the agencies involved, the State of California funded the design, development, and deployment of a decision support system (DSS) that facilitates F-CO for the Yuba-Feather system.

5.3.2.4 Urban Levee Design Criteria (ULDC).

Levee systems in California that protect urban communities of more than 10,000 people (or urbanizing communities expected to grow to 10,000 people) must meet State ULDC. ULDC geometry standards require 3 feet of freeboard over the 0.5 percent annual chance flood elevation (200-year flood elevation). Exceptions and deviations from this standard are permitted depending on the method and certainty by which the 200-year flood elevation was modeled.

5.3.2.5 CVFPB Designated Floodways

The Central Valley Flood Protection Board (CVFPB) has the authority to study, designate, and regulate uses within Designated Floodways in the Central Valley. The CVFPB defines a Designated Floodway as either the channel of the stream and that portion of the adjoining floodplain reasonably required to provide for the passage of a design flood as indicated by floodway encroachment lines on an adopted map, or the floodway between existing levees as adopted by the board or the Legislature (23 Cal. Code Regs § 4[i]). Designated Floodways have different boundaries than the regulatory floodways delineated on FEMA Flood Insurance Rate Maps (FIRMs) and are used to implement a separate regulatory process at the State level. Digital maps of the CVFPB Designated Floodways are hosted on DWR Best Available Map (BAM).

CVFPB regulations reduce risk by limiting exposure within Designated Floodways. Under CVFPB regulations (23 Cal. Code Regs § 107), the only uses permitted in the Designated Floodway are:

(a) Open space uses not requiring a closed building, such as agricultural croplands, orchards, livestock feeding and grazing, or public and private recreation areas.

(b) Fences, fills, walls, or other appurtenances which do not create an obstruction or debris-catching obstacle to the passage of floodwaters.

(c) Storage yards for equipment and material, if the equipment and material can be either securely anchored or removed upon notice.

(d) Railroads, streets, bridges, and public utility wires and pipelines for transmission and local distribution.

(e) Commercial excavation of materials from pits, strips, or pools provided that no stockpiling of materials, products, or overburden creates an obstruction to the passage of flood flows.

(f) Improvements in stream channel alignment, cross-section, and capacity.

(g) Structures that are designed to have a minimum effect upon the flow of water and are firmly anchored to prevent the structure from flotation, provided that normally no structures for human habitation will be permitted.

(h) Recreational vehicles and related service facilities that are either floodproofed or are removed during the flood season of the particular stream involved.

(i) Other uses which are not appreciably damaged by floodwaters.

Encroachments in the floodway require review and approval from the CVFPB.

5.3.2.6 Sacramento River Basin and San Joaquin River Basin Water Quality Control Plan

The preparation and adoption of water quality control plans (Basin Plans) is required by the California Water Code (Section 13240) and supported by the Federal Clean Water Act. Section 303 of the Clean Water Act requires states to adopt water quality standards which "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." According to Section 13050 of the California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. State law also requires that Basin Plans conform to the policies set forth in the Water Code beginning with Section 13000 and any state policy for water quality control. Since beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control (40 C.F.R. 131.20).

Beneficial uses are critical to water quality management in California. State law defines beneficial uses of California's waters that may be protected against quality degradation to include (and not be limited to) "...domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Water Code Section 13050(f)). Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning.

The Basin Plan divides the Yuba River watershed into two regions: Sources to Englebright Reservoir and Englebright Dam to the Feather River. Existing beneficial uses for Sources to Englebright Reservoir are listed as the following:

- Municipal and Domestic Supply;
- Irrigation;
- Stock Watering;
- Power;
- Contact Recreation;
- Canoeing and Rafting;
- Other Non-Contact;
- Cold Freshwater Habitat;

- Cold Spawning; and
- Wildlife Habitat.

Existing beneficial uses for Englebright Dam to Feather are listed as the following:

- Irrigation;
- Stock Watering;
- Power
- Contact Recreation
- Canoeing and Rafting;
- Other Noncontact Recreation;
- Warm Freshwater Habitat;
- Cold Freshwater Habitat
- Warm Spawning;
- Cold Spawning; and
- Wildlife Habitat.

5.3.3 Local

5.3.3.1 Water Supply Uses

Within the Project Area, Yuba Water pumps some water directly from New Bullards Bar Reservoir to supply water to the Cottage Creek Water Treatment Plant for domestic and recreational uses adjacent to the reservoir. The amount of this pumping averages approximately 6 ac-ft per year, which does not affect overall New Bullards Bar Reservoir operations. Yuba Water anticipates that pumping of this small amount of water will continue during the period of the new license.

Yuba Water also provides water supply to its member units, as described in detail in Section 5.2.2.3.

5.3.3.2 Local General Plan

All cities and counties in California are required to prepare general plans to guide future growth and development in a manner consistent with State law. General plans inform the types of land uses and development standards permitted within a city or county and serve as the legal basis for local zoning and permitting decisions. California statute mandates that local agencies consider flood protection in the safety element of their local general plans. Senate Bill 397 (2015) added a requirement that the safety element be updated to include a climate change vulnerability assessment, and adaptation and resiliency strategies to address those vulnerabilities (Cal. Gov. Code § 65302).

Both Yuba County and the City of Marysville updated the safety elements of their respective general plans in 2021 to meet the requirements of SB 397 and incorporated the 2021 Local Hazard Mitigation Plan (LHMP) by reference (City of Marysville 2022, Yuba County 2021a). The City

of Wheatland has identified the need to update its safety element and incorporate the LHMP (Yuba County 2021b) and is seeking funding to complete this action. Each local agency's safety element identifies goals and policies to reduce flood risk, described below under Hazard Mitigation Planning.

5.3.3.3 Yuba County Development Code Title XI

Yuba County Development Code (Title XI) includes provisions to comply with the 2007 California Senate Bill-5 (SB 5) which required 200-year urban level of flood protection for urban areas in the California Central Valley. Title XI applies to areas within the 200-year floodplain as delineated on the most current available maps from the State of California or as adopted by the County. Title XI requires that the County find that there is an urban level of flood protection for urban/urbanizing areas, or a FEMA-standard level of protection for non-urban areas, prior to approving a tentative map or parcel map located within a flood hazard zone.

5.3.3.4 Hazard Mitigation Planning

Hazard mitigation planning reduces flood risk by identifying actions to reduce flood risk and making local agencies eligible for State and federal funding to implement mitigation actions. The Disaster Mitigation Act of 2000 outlined requirements for State and local hazard mitigation plans (SHMPs and LHMPs, respectively) to be developed and updated every five years as a condition of eligibility for certain federal mitigation and disaster recovery funding. California's SHMP outlines tools, resources, and strategies for addressing hazards at the local level. Assembly Bill 2140 (2006) provides financial incentives to local agencies to prepare LHMPs and adopt them by reference as part of the safety element of their local general plan. Yuba County prepared an update to its multi-jurisdictional LHMP in 2021 (Yuba County 2021b), covering the County, the City of Marysville, the City of Wheatland, Yuba Water, all five reclamation districts, and other special districts within the County.

Yuba County's HMP includes goals and actions around climate change, dam failure, drought and water shortage, floods, and levee failure, among others. HMP goals associated with water resources include the following:

> **GOAL 1**: Minimize risk and vulnerability of Yuba County to natural hazards, including climate change considerations, and prevent injuries, loss of life, and damage to property, economy and the environment
>
> **GOAL 2**: Provide protection for critical facilities, infrastructure, and utilities; and create redundancy and reliability to minimize loss and facilitate recovery
>
> **GOAL 3**: Promote public awareness, education, and understanding of natural hazards and the risks they present to quality of life, property and the economy; and encourage individual responsibility to minimize impacts to natural hazards

GOAL 4: Enhance the ability of Yuba County and participating jurisdictions to be prepared for, respond to, and recover from the effects of hazards on people, property, economy, and the environment; including expanded use of technology and shared resources

GOAL 5: Continue to support partnerships with private and public sector agencies, businesses, and organizations to further comprehensive planning and implementation of mitigation measures

GOAL 6: Maintain FEMA eligibility and position Yuba County and participating jurisdictions for grant funding through continued compliance with the Disaster Mitigation Act of 2000 and the National Flood Insurance Program

HMP actions associated with water resources include the following

Yuba County Action 1: Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Yuba County Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Yuba County Action 5. Climate Change Vulnerability Analysis

Yuba County Actions 6 through 12. Local drainage improvements

City of Marysville Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

City of Marysville Action 2. General Plan Safety Element Update

City of Marysville Action 3. Dam Failure Mitigation

City of Marysville Action 4. Update Safety Element Policies and Implement Drought and Water Shortage Policies

City of Marysville Action 5. Update Safety Element Flood Policies and Implement Flood Policies

City of Marysville Action 6. Levee Upgrades by the Army Corps

City of Wheatland Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

City of Wheatland Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

City of Wheatland Action 4. Annual Coordination with Dam Owner

City of Wheatland Action 5. Annual Storm Drain and Storm Ditches Cleaning

City of Wheatland Action 8. Comprehensive Drinking Water Project - Phase 1

City of Wheatland Action 9. Comprehensive Drinking Water Project - Phase 2

Browns Valley Irrigation District Action 3. Sicard Flat Ditch with Pipeline

Browns Valley Irrigation District Action 4. Replace Remaining Wood Flume with Metal Flume during Regular Maintenance

Browns Valley Irrigation District Action 5. Relocate Bypass Channel that Supplies Yuba River Water to BVID Fish Screen/Pump Station

Marysville Levee Commission Action 1. Eliminate Openings in Levees

Marysville Levee Commission Action 2. Addressed Levee Underseepage

Reclamation District 10 Action 1. Implement Feather River Levee Improvement Projects - Seepage and Stability Mitigation (Feather River Levee Improvement Projects) – (To consider combination of seepage/stability berms and/or cutoff walls) Implementation of the RD 10 Toe Access Corridor Project for Flood Fight Access, Monitoring, and Operations and Maintenance

Reclamation District 10 Action 2. Implementation of the RD 10 Toe Access Corridor Project for Flood Fight Access, Monitoring, and Operations and Maintenance

Reclamation District 10 Action 3. Implement: Pipe Replacement Projects and Pump Improvement Projects

Reclamation District 784 Action 1. Dam Failure Mitigation

Reclamation District 784 Action 2. Drought & Water Shortage Mitigation

Reclamation District 784 Action 4. Floods: Localized Stormwater Mitigation

Reclamation District 784 Action 5. Flood Mitigation

Reclamation District 784 Action 7. Severe Weather Mitigation

Reclamation District 2103 Action 1. Implement improvements recommended in Dry Creek and Small Communities Flood Risk Reduction Feasibility Studies

Reclamation District 2103 Action 2. Repair and certify Grasshopper Slough Levee

Reclamation District 2103 Action 3. Develop a USACE System-Wide Improvement Framework Plan

South Sutter Water District Action 1. Auxiliary Spillway

Three Rivers Levee Improvement Authority Action 1. Yuba River North Training Wall Project

Three Rivers Levee Improvement Authority Action 2. Yuba River Goldfields 500 yr Project

Yuba County Water Agency Action 1. New Bullards Bar Dam Secondary Spillway

5.4 Impact Assessment Methodology

This section presents the assessment methods used to analyze the effects on surface water supply, the thresholds of significance that determine the significance of effects, and the potential environmental consequences as they relate to the Proposed Projects and their alternatives.

For purposes of this evaluation, the primary study area is the portion of the Yuba River watershed directly affected by operations of the YRDP and Narrows Project for the Proposed Projects and alternatives. More specifically, this area is the Middle Yuba River downstream from the Our House Diversion Dam; Oregon Creek downstream from the Log Cabin Diversion Dam; the North Yuba

River, including New Bullards Bar Reservoir downstream from the high water mark of the reservoir; and the Yuba River to its confluence with the Feather River.

The secondary study area is portion of the Yuba River watershed indirectly affected by operations of the YRDP and Narrows Project for the Proposed Projects and alternatives, and the portions of the Delta watershed indirectly affected by operations of the YRDP and Narrows Project for the Proposed Projects and alternatives. More specifically, this area includes NID and PG&E's Yuba-Bear and Drum-Spaulding projects, but only as their operations for water supply are indirectly affected by Yuba Water's Alternative 1; their operations to meet other regulatory requirements are outside the scope of Yuba Water's analysis.

5.4.1 Impact Analysis Methodology

This analysis addresses impacts relating to surface water resources, specifically water supply and flood management, that could result from operation activities at the Projects sites, as well as project-related changes to reservoir operations (e.g. reservoir releases to meet different flow requirements) and resulting downstream hydrology.

5.4.1.1 Construction

None of the construction-related activities associated with the Proposed Projects or alternatives affect New Bullards Bar Reservoir's ability to make releases through the New Colgate Powerhouse, nor would any construction activities affect releases from Englebright Reservoir, or agricultural diversion structures near Daguerre Point Dam. Accordingly, there would be no construction-related impacts from the Proposed Projects or their alternatives on water supplies. Because of this, construction impacts associated with water supply will not be analyzed in this chapter.

Construction activities, particularly associated with the Our House and Log Cabin diversion dams have the potential to affect high-flow operations at those facilities. Construction activities within the New Bullards Bar Reservoir area would not affect New Bullards Bar Dam's ability to regulate high flows. Potential impacts associated with construction activities around these facilities are discussed below.

5.4.1.2 Operations

The operations analysis evaluates impacts related to hydrologic changes from the Proposed Projects and alternatives, including changes in flows downstream from New Bullards Bar Dam and changes in surface water supply availability to Yuba Water member units.

Potential impacts are assessed based on model results from Yuba Water's Yuba River Development Project Model (YRDPM). The YRDPM includes representation of a long-term period of record of hydrology (water year 1970 through 2021), member unit water supply demands, current and proposed facilities, and current and proposed operational requirements. Changes in simulated flows and water supply deliveries as a result of each alternative, relative to the bases of comparison, are used to determine potential impacts. More information about the

YRDPM, including assumptions, inputs, and model limitations, are further described in Appendix 5A, Yuba Water Operations Model Technical Memorandum.

Yuba Water's analysis also relied on the "Mini-Model" described in Appendix 5E, Yuba Water Mini Model Technical Memorandum, to simulate operations of NID's Yuba-Bear Project and PG&E's Drum-Spaulding Project under various regulatory regimes including their existing and proposed FERC license requirements. Yuba Water developed the Mini-Model to provide a reasonable representation of inflows to the YRDP and Narrows Project for use in evaluating the effects of changes in Yuba-Bear and Drum-Spaulding projects' flow regimes on YRDP and Narrows Project resource areas. The intent was to provide a reasonable representation of the general timing and magnitude of inflows above Our House Diversion Dam and Englebright Reservoir.

While the Mini-Model includes information about changes in storage in Yuba-Bear and Drum-Spaulding reservoirs and associated water supply deliveries, the model is limited in its representation of many of the Yuba-Bear and Drum-Spaulding projects' operations, including flow ramping, recreational flows, and spill cessations. The Mini-Model does not include specific demands for NID and PG&E customers, it instead diverts available water up to the Milton-Bowman, South Yuba, and Drum canals' respective capacities. A more refined water-supply analysis would need to incorporate, among other things, the measures that water suppliers that receive water conveyed through the various canals state that they take in dry years in, among other documents, their urban water management plan. For purposes of the programmatic analysis of indirect impacts upstream of the YRDP resulting from YB/DS operations under Alternative 1, reductions in flows in those canals are treated as conservatively representative of a potential reduction in water supply. However, NID, PG&E and other water suppliers that use water exported from the Yuba River watershed via the Yuba-Bear and Drum-Spaulding projects would have various water management measures available to them, potentially in consultation with FERC and the resource agencies.

The programmatic analysis assumes that the upstream operations would incorporate reasonably foreseeable measures to avoid or reduce water supply impacts. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

5.4.1.2.1 Methodology for Determining Changes in Flow

Changes in simulated daily river flows as a result of each alternative's assumptions (including those of the Proposed Projects) are compared to the appropriate basis of comparison to determine changes in river flow resulting from each alternative. Table 5.4-1 shows the appropriate basis of comparison for each alternative. Table 5.4-2 below shows the summary of model scenarios for YRDP and Narrows Project analyses. A comprehensive description of the bases of comparison is included in Section 2.6, the Proposed Projects is described in Section 2.7, Alternative 1 is described in Section 3.3, and Alternative 2 is described in Section 3.4. The intent of each comparison is described in Section 4.4.

Table 5.4-1. Summary of Scenario Comparisons.

Alternative Scenario Number	Alternative Scenario Name	Basis of Comparison Number	Basis of Comparison Name
3	No Project	1	Existing Condition
4	Proposed Projects	1	Existing Condition
5	Proposed Projects (Future)	2	Future Baseline
6	Alternative 1	1	Existing Condition
6	Alternative 1	2	Future Baseline
9	Alternative 2	1	Existing Condition
9	Alternative 2	2	Future Baseline
7	Proposed Projects Cumulative Condition	1	Existing Condition
8	Alternative 1 Cumulative Condition	1	Existing Condition
10	Alternative 2 Cumulative Condition	1	Existing Condition

The No Project Alternative is functionally equivalent to the Existing Condition from a flow and water supply perspective because, in the No Project Alternative, Yuba Water would continue to operate at least the YRDP and Narrows Project's facilities to achieve Yuba Water's flood-control and water-supply missions as defined by the Legislature in the Yuba County Water Agency Act. Accordingly, no quantitative analysis is included for the No Project Alternative in this section.

5.4.1.2.2 Methodology for Determining Changes in Surface Water Supplies

The YRDP and Narrows Project are operated to provide water supply to agricultural water users within Yuba County, which is defined in the Basin Plan as an existing beneficial use of water within the watershed. As described above, the YRDPM includes representation of daily water supply deliveries to Yuba Water's Member Units for the full period of record. The YRDPM will impose surface water supply shortages on Yuba Water's Member Units when New Bullards Bar Reservoir storage would otherwise drop below a carryover storage target of 440,000 acre-feet at the end of September, with a maximum potential shortage of 50% of daily combined water supply demand. Shortages are applied to member units without pre-1914 water rights first to maintain storage above 440,000 acre-feet; if additional shortages are necessary to meet flow requirements and no water is available from New Bullards Bar Reservoir storage (i.e., New Bullards Bar Reservoir is at minimum storage), pre-1914 water right holders would be subject to shortages as well. Under Alternative 2, the SWRCB's thresholds of 600,000 acre-feet for wet, above normal, and below normal years, and 400,000 acre-feet for dry and critical years are used instead of New Bullards Bar Reservoir minimum storage[11].

Re-operation of the YRDP under each alternative could result in different volumes of shortages. The YRDPM assumes shortages in surface water supply deliveries would be made up from groundwater pumping. As evaluated and discussed in Chapter 6 Groundwater Resources, the associated impacts on groundwater may be significant, but this chapter focuses on surface-water resources. The YRDPM also assumes that Yuba Water member units would pump 30,000 acre-feet of groundwater in NYI Schedule 6 years under the two bases of comparison rather than taking surface water diversions, and 30,000 acre-feet of surface water would be released to the Yuba River below Englebright Reservoir above the required flow. Under the Proposed Project, NYI

[11] Described in the SWRCB Program of Implementation (POI) in Chapter 4 of the October 2024 draft of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed (SWRCB 2024).

Schedule 6-required flows at Marysville are increased to a rate that they would effectively otherwise have been with groundwater substitution transfers. These required flows could be met by releases from New Bullards Bar Reservoir storage, or with groundwater substitution transfers. Accordingly, neither the Proposed Projects nor their alternatives include the assumption that Yuba Water member units would pump groundwater rather than take surface water deliveries in NYI Schedule 6 years.

Yuba Accord water transfers play an important role in statewide water supply. Yuba Water transfers are measured at the Marysville gage relative to a defined baseline operation. Those transfers therefore generally involve an increment of water that Yuba Water releases to meet minimum Yuba River flows, rather than an additional release specifically for transfers. Accounting for transfers includes a determination of the baseline flow and the accounting for refill of New Bullards Bar Reservoir after the transfer. This accounting is typically conducted in real-time and includes consideration of SWP and CVP operations. For purposes of this analysis, companion Baseline operations are simulated using the YRDPM to represent operations under similar hydrological conditions, but according to Baseline operations defined in the Yuba Accord Water Purchase Agreement (Yuba Water and DWR 2007). Modeling conducted by the California Department of Water Resources (DWR) for its 2023 Delivery Capability Report (2023 DCR) (DWR 2024a) is used to define periods when the CVP and SWP could take the Yuba Accord transfers. Yuba Accord transfers have historically contributed to statewide water supplies. Changes in Marysville flow during balanced conditions[12] in July through October are generally considered directly transferrable in the Delta. As a result, simulated increases in Yuba River flow at Marysville during July through October, compared to the transfer Baseline operations, when the Sacramento River-San Joaquin River Delta is in balanced condition, will be used to represent potential Yuba Accord water transfers, and changes in agricultural water supply shortages will be used as a surrogate for changes in ability to provide groundwater substitution transfers.

Since the Mini-Model's representation of NID and PG&E operations is relatively coarse, diversions to PG&E's Drum Canal and NID's South Yuba Canal are aggregated into a single value, the "Spaulding Canals". For purposes of the programmatic analysis, a reduction in diversions to the Spaulding Canals could result in potential reductions in water supplies for NID and PCWA users if reasonably foreseeable operational measures are not available to avoid or mitigate the potential reductions.

Using the comparisons described in Table 5.4-1, differences in shortages in surface water supply deliveries for each alternative and basis of comparison will be evaluated to determine if an alternative has an impact on water supply deliveries.

[12] Sacramento River-San Joaquin River Delta balanced conditions is defined in the December 12, 2018, Addendum to the Agreement between the United States of American and The Department of Water Resources of the State of California for Coordinated Operation of the Central Valley Project and the State Water Project (DWR and Reclamation 2018).

Table 5.4-2. Summary of Model Scenarios for YRDP and Narrows Joint EIR.

	Existing Condition Also is **No Action Alternative**	**Future Baseline**	**No Project Alternative** YRDP Non-power Alternative (license surrender)	**Proposed Projects** FERC YRDP FEIS Staff Alternative +(YCWA WQC) Narrows Project - YCWA 2023 FLA	**Proposed Projects for Future Comparison** FERC YRDP FEIS Staff Alternative +(YCWA WQC) Narrows Project - YCWA 2023 FLA For Comparison with Future Baseline	**Alternative 1** - Yuba Water October 31, 2022, Offer of Settlement	**Cumulative Condition** YRDP/Narrows Proposed Projects & YB/DS 4(e) Flows & Others (e.g., ARC Spillway**)	**Cumulative Condition** – YRDP/Narrows Proposed Projects & YB/DS 4(e) Flows & Others (e.g., ARC Spillway**);	**Alternative 2 for Future Comparison** - SWRCB 55% UIF + Proposed Projects for Future Comparision FERC YRDP FEIS Staff Alternative +(YCWA WQC) Narrows Project - YCWA 2023 FLA For Comparison with Future Baseline	**Cumulative Condition** – YRDP/Narrows Proposed Projects & YB/DS 4(e) Flows & Others (e.g., ARC Spillway**);	**Alternative 2** - SWRCB 55% UIF + Proposed Projects FERC YRDP FEIS Staff Alternative +(YCWA WQC) Narrows Project - YCWA 2023 FLA
Scenario Number	1	2	3	4	5	6	7	8	9	10	11
Abbreviated Name	Base Case	Base Case (4e for YB/DS)	YRDP Non-Power	FEIS (EC for YB/DS)	FEIS (4e for YB/DS)	Alternative 1 Future (4e for YB/DS)	Cumulative	Cumulative Alt 1	Alternative 2 Future (4e for YB/DS)	Cumulative Alt 2	Alternative 2 (EC for YB/DS)
Period Of Simulation	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021	1970-2021
Yuba-Bear/Drum Spaulding Project Flow Requirements											
Below Milton Diversion Dam	Existing	4(e)	Existing	Existing	4(e)	4(e)	4(e)	4(e)	4(e)	4(e)	Existing
Below Bowman and Spaulding Reservoirs	Existing	4(e)	Existing	Existing	4(e)	4(e)	4(e)	4(e)	4(e) or 55% UIF at Confluence with Yuba River, whichever is greater	4(e) or 55% UIF at Confluence with Yuba River, whichever is greater	Existing or 55% UIF at Confluence with Yuba River, whichever is greater
Yuba River Development Project Flow Requirements											
Below Englebright Dam	Yuba River Accord	Yuba River Accord	Yuba River Accord	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative or 55% UIF at Marysville, whichever is greater	FEIS Staff Alternative or 55% UIF at Marysville, whichever is greater	FEIS Staff Alternative or 55% UIF at Marysville, whichever is greater
Below Our House and Log Cabin Dams	Existing	Existing	Existing	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative or 55% UIF at Confluence with NYR, whichever is greater	FEIS Staff Alternative or 55% UIF at Confluence with NYR, whichever is greater	FEIS Staff Alternative or 55% UIF at Confluence with NYR, whichever is greater
Below New Bullards Bar Dam	Existing	Existing	Existing	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative
Other Yuba River Development Project Requirements											
Spill Ramping at New Bullards Bar Dam	None	None	None	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative
New Colgate Powerhouse Upper Intake	None	None	None	WQC (Upper March-May)	WQC (Upper March-May)	WQC (Upper March-May)	WQC (Upper March-May)	WQC (Upper March-May)	WQC (Upper March-May)	WQC (Upper March-May)	WQC (Upper March-May)
Lohman Ridge and Camptonville Tunnel Closures	None	None	None	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative
Narrows 1 and 2 Coordinated Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations	2021 Operations
Flow Fluctuation/ Ramping below Englebright Dam	Existing	Existing	D-1644	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative	FEIS Staff Alternative
New Bullards Bar Target Operating Line	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024	Yuba River Accord 2024
Schedule 6 Groundwater Substitution Transfers	Yes	Yes	Yes	No	No	No	No	No	No	No	No
YCWA Offer of Settlement											
Vary Englebright Elevation	No	No	No	No	No	Yes	No	Yes	No	No	No
15.6TAF Added Release YB/DS w YCWA Reoperate for fall	No	No	No	No	No	Yes	No	Yes	No	No	No
Cumulative Actions											
ARC Spillway	No	No	No	No	No	No	Yes	Yes	No	Yes	Yes

Note: YCWA – Yuba Water.

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5.4.2 Impact Indicators and Significance Criteria

5.4.2.1 Impact Indicators

5.4.2.1.1 Water Supplies

Three different parameters are analyzed to evaluate any water-supply impacts, specifically: (1) shortages in Yuba Water's water supply deliveries to its Member Units; (2) Yuba Water's transfers to buyers downstream of the lower Yuba River; and (3) exports out of the Yuba River watershed by NID and PG&E through their Yuba-Bear Project and Drum-Spaulding Projects, respectively.

Yuba Water imposes shortages to maintain storage in New Bullards Bar Reservoir for water supply in subsequent drought years. Yuba Water's member unit contracts apply shortages first to member units without senior water rights (Brophy Irrigation District, Dry Creek Mutual Water Company, Ramirez Water District, and South Yuba Water District, and the Wheatland Water District), all of which except Ramirez WD are located south of the Yuba River.

Reoperation of the YRDP under the Proposed Projects and their alternatives may result in reduced surface water deliveries by Yuba Water to its Member Units in some years. In reporting simulated model results, the focus is on both the volume of shortages in surface water supply to Yuba Water member units resulting from changes in water supply availability and the frequency of shortages. Changes in shortage volumes, computed as the difference between total annual demand and total annual surface water supply deliveries, between the Proposed Projects and alternatives and the bases of comparison will be used to evaluate effects on water supply. When faced with shortages, the member units effectively have three options: (1) pump groundwater to replace the reduction in surface water; (2) fallow land; or (3) do a combination of groundwater pumping and land fallowing. The decision about which of these options to take is made by individual farmers based on a multitude of factors including the value of the crop, the cost of groundwater pumping, and the availability of groundwater. For purposes of this analysis, Yuba Water assumes reductions in surface water deliveries to the member units would be made up by groundwater pumping. An increase in the frequency of shortages in water supply deliveries within the period of record to Yuba Water member units could imply one of the existing beneficial uses of water within the watershed is not being met.

Similarly, reoperation of the YRDP under the Proposed Projects and their alternatives could affect Yuba Accord water transfer volumes due to changes in flow requirements or New Bullards Bar Reservoir storage. The Yuba Accord water transfers are one of the few long-term transfer programs available to State Water Project (SWP) and Central Valley Project (CVP) agricultural water service contractors. During the 2014 drought, Yuba Water transferred a total of 104,663 acre-feet (AF) of water, split evenly between the SWP and CVP, with each receiving 50,823 AF. That year, SWP contractors received 474,421 AF of their Table A contract supplies, which was only about 11% of the total contracted amount (4,172,786 AF in 2023). Similarly, south-of-Delta CVP agricultural contractors had a 0% allocation of their contract amount (1,951,217 AF in 2023) and received no CVP contract deliveries. The Yuba Accord transfers accounted for over 10% of many SWP and CVP contractors' total water supply, highlighting their importance during drought conditions. Although not every dry year is as severe as 2014, reducing Yuba Accord transfers in such years

would substantially impact water supply reliability to SWP and CVP contractors. As shown in Table 5.3-5, the historical average annual transfer volume in dry and critical years has been 109,494 AF. DWR Table A deliveries in dry and critical years since 2007 have averaged 907,630 AF (DWR 2012a, 2012b, 2013, 2015, 2016, 2017, 2024b); a 20% reduction in transfers would mean a loss of almost 11,000 AF each to SWP and CVP contractors which would be about 1% of the total SWP Table A deliveries in dry and critical years; in those years, even a 1% reduction in SWP water supply is meaningful.

Operations under Alternative 1 could lead to reductions in diversions by NID and PG&E through PG&E's Drum Canal and NID's South Yuba Canal, combined in modeling as Spaulding Canals. This programmatic analysis assumes that NID's and PG&E's diversions during dry and critical years would provide water supply to NID and PCWA water users. Consequently, reductions in Spaulding Canals' diversions during these years could indicate reductions in water supply deliveries.

5.4.2.1.2 Flood Protection

Reoperation of the YRDP under the Proposed Projects or the alternatives may result in changes in flow throughout the Yuba River. Increases in high flows could damage downstream infrastructure, or subject populations to increased flood risk. Changes in flood risk will be represented by changes in New Bullards Bar Reservoir releases beyond those permitted by the USACE WCM, or a reduction in flood protection performance from New Bullards Bar Dam.

5.4.2.2 Significance Criteria

5.4.2.2.1 Flood Protection

For flood protection, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, New Bullards Bar Reservoir spills, the Proposed Projects or the alternatives would have a significant impact on flooding if it would:

- **Impact SW-1:** Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or
- **Impact SW-2:** Impede or redirect flood flows.

5.4.2.2.2 Water Supplies

Impact indicators and significance criteria provided in the CEQA Guidelines Appendix G: Environmental Checklist Form do not provide specific guidance for evaluating potential surface water supply-related impacts that could result from the Proposed Projects or alternatives, so indicators aligned with the potential effects of the Proposed Projects and alternatives have been defined. For surface water supplies, the Proposed Projects or the alternatives would have a significant impact, relative to the appropriate basis of comparison, if it would result in:

- **Impact SW-3:** A reduction in surface water deliveries to Yuba Water Member Units, relative to the appropriate bases of comparison shown in Table 5.4-1, as a result of

decreases in annual water supply availability or increases in flow requirements in the Yuba River below Englebright Dam, at an increased frequency and magnitude that, assuming the Yuba Water Member Units elected to pump a similar volume groundwater to replace the reduced surface water delivery, would result in groundwater levels below the local management levels defined in the Yuba Groundwater Sustainability Plan (Yuba Water 2024b), would be considered significant. Effects of increases in groundwater pumping are evaluated in Chapter 6, Groundwater Resources.

- **Impact SW-4:** Yuba Accord water transfers provide water supply value to water users outside of the Yuba River watershed, particularly in Dry and Critical[13] years. While there is substantial variation in year-to-year transfers, reductions in Yuba Accord transfers greater than 20% in Dry or Critical years would represent a meaningful reduction in water supply reliability to CVP and SWP water contractors and would be considered potentially significant.
- **Impact SW-5**: Alternative 1 has the ability to affect diversions from NID and PG&E's Yuba-Bear and Drum-Spaulding projects to the Drum and South Yuba Canals (combined in modeling as Spaulding Canals). For purposes of the programmatic analysis of this impact, a significant impact would occur if these changes in diversions cause additional water supply shortages for NID and PCWA water users.

5.5 Environmental Impact Analysis

5.5.1 Hydrologic Effects of Alternatives

The following discussion provides a narrative discussion of how the YRDP and Narrows Project operate under each of the scenarios to provide a context for potential impacts associated with operations of the projects. Operational requirements for the Existing Condition and the Proposed Projects are described in detail in Chapter 2, and for the alternatives in Chapter 3.

5.5.1.1 Existing Conditions

Under the Existing Conditions scenario, the YRDP and Narrows Project are operated to meet the existing requirements.

5.5.1.1.1 Areas Upstream of Englebright Dam

Our House and Log Cabin Diversion Dams

On the Middle Yuba River, all inflow above the required flow below the Our House Diversion Dam is diverted into the Lohman Ridge Tunnel up to its physical capacity. The Lohman Ridge Tunnel directs the flow into Oregon Creek above the Log Cabin Diversion Dam. Similar to operations at the Our House Diversion Dam, flows greater than the requirement for below the Log Cabin Diversion Dam are diverted into the Camptonville Tunnel and subsequently released directly into New Bullards Bar Reservoir. Flows below Our House and Log Cabin diversion dams

[13] As defined in SWRCB Decision 1641 in the Matter of: Implementation of Water Quality Objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (SWRCB 2000).

combine in the Middle Yuba River and subsequently combine with the North Yuba River to form the headwaters of the Yuba River.

New Bullards Bar Dam and Reservoir

New Bullards Bar Reservoir receives inflow from the North Yuba River and from the Camptonville Tunnel. New Bullards Bar Reservoir is generally operated in three modes: (1) to meet the requirements of the USACE water control manual (WCM); (2) to meet flow requirements and agricultural water supply demand in the Yuba River below Englebright Dam; and (3) to manage storage throughout the year to reach an end-of-September storage target of 650,000 acre-feet. Releases are made from the dam's base to meet the required North Yuba River flow below New Bullards Bar Dam via the Minimum Flow Powerhouse and from dam seepage. Any additional releases for the three modes are first made through the New Colgate Powerhouse up to its capacity. The only condition under which flows would be made from the New Bullards Bar Dam spillway would be if additional releases beyond the capacity of the New Colgate Powerhouse and Minimum Flow Powerhouse were needed to meet the USACE WCM storage restrictions described in Section 5.2.1.4.

If operations to meet minimum flows and agricultural water supply deliveries below Englebright Dam would result in end-of-September New Bullards Bar Reservoir storage greater than 650,000 acre-feet, releases from New Bullards Bar Dam would be increased, and Englebright Dam releases would reflect New Bullards Bar Dam releases plus inflows from the Middle Yuba and South Yuba rivers, potentially above the flows needed to meet lower Yuba River flow requirements and agricultural water supply deliveries.

If operations to meet flow requirements and agricultural water supply deliveries would result in an end-of-September storage of less than 440,000 acre-feet in the first year of a drought or 400,000 acre-feet in subsequent drought years, Yuba Water would reduce water supply deliveries to a level that would ensure at least 440,000 acre-feet or 400,000 acre-feet, whichever is appropriate, at the end of September with a maximum shortage of 50% of total demand. New Bullards Bar Reservoir storage would be drawn down potentially all the way to the minimum pool (230,000 acre-feet), if a 50% reduction in water supply deliveries was insufficient to meet required flows in the lower Yuba River at all times. If Yuba Water reduces water supply deliveries to meet an end-of-September storage of 440,000 acre-feet or 400,000 acre-feet, the member units would pump an equivalent volume of groundwater to meet their agricultural water supply demands.

5.5.1.1.2 Lower Yuba River

Englebright Dam and Reservoir

Releases from Englebright Reservoir are made through three outlets: (1) the Narrows 1 Powerhouse; (2) the Narrows 2 Powerhouse; and (3) the Englebright Dam spillway. The Englebright Dam spillway is generally not used unless both powerhouses are operating at their maximum capacity, and since the New Colgate Powerhouse release capacity is less than the combined capacity of the two powerhouses, Englebright spills would not occur unless New Bullards Bar Dam is spilling or inflows from the Middle Yuba and South Yuba rivers were relatively high, or a combination of both factors. The decision process to divide Englebright Dam

releases between the Narrows 1 and Narrows 2 powerhouses is described in detail in Section 2.4.1.3.

Non-spill releases from Englebright Dam are made for two purposes: (1) to meet flow requirements and agricultural diversion demands in the lower Yuba River, and (2) to maintain the water surface elevation in Englebright Reservoir around 519 feet above mean sea level. Releases for flow requirements and agricultural water supply are determined based on the greater of the Smartsville flow requirement or the Marysville flow requirement plus agricultural diversions from Daguerre Point Dam less intervening accretions. Releases from New Bullards Bar Reservoir, through the New Colgate Powerhouse, are used to supplement inflows from the Middle Yuba and South Yuba rivers, if needed, to meet the lower Yuba River minimum flows and agricultural diversions.

Lower Yuba River Flows

As described above, flows in the Yuba River downstream from Englebright Dam under the Existing Condition are driven by operations to meet flow requirements at the Smartsville and Marysville gages and to provide agricultural water supply deliveries to diversion points near the Daguerre Point Dam. If New Bullards Bar Reservoir is operating for storage management or inflows to the Yuba River and Englebright Reservoir downstream from New Bullards Bar Dam are relatively high, flows in the lower Yuba River would be above the required flows, but under no circumstance would flows be less than the required flows.

Agricultural Water Supply Deliveries

Yuba Water provides water supplies at three locations along the lower Yuba River: (1) BVID's Pumpline Diversion just upstream from Daguerre Point Dam; (2) the Hallwood-Cordua Canal at the north end of the Daguerre Point Dam; and (3) the Yuba Main Canal, also known as the South Canal, at the south end of the Daguerre Point Dam. These agricultural water supplies are described in detail in Section 5.2.2.3 above. Shortages in agricultural water supplies only occur when New Bullards Bar Reservoir's storage is forecasted to fall below 440,000 acre-feet at the end of September in the first year of a drought, or below 400,000 acre-feet after the first year of a drought. Shortages under the Existing Condition are limited to a maximum of 50% of total annual demand. Groundwater would be pumped, up to the region's pumping capacity, to make up any shortages in surface water deliveries.

Yuba Accord Transfers

Under the Yuba Accord water transfer program, Yuba Water would potentially provide transferable Yuba River outflow through three methods: (1) the primary method of operating to meet required flows, a portion of the required flow at the Marysville gage could be potentially transferable; (2) when operating for an end-of-September storage of 650,000 acre-feet, a portion of the releases above the minimum flows could be potentially transferable; and (3) through groundwater substitution transfers. Under both methods (1) and (2), the portion of the flow considered potentially transferable is based on measured flows at the Marysville gage above a computed baseline flow.

Transfer Baseline operations would be based on the same inflows to the YRDP and Narrows Project as the Existing Conditions, but with operations to meet the Transfer Baseline operations,

as defined in the Yuba Accord Water Purchase Agreement. In addition to transfers from water released from New Bullards Bar Reservoir, the Yuba Accord provides an opportunity for member units to pump groundwater rather than taking surface water deliveries, also known as a groundwater substitution transfer. Yuba Water stores the undelivered water supply in New Bullards Bar Reservoir and makes it available to the buyers downstream of the lower Yuba River at a time they can take it. Any groundwater pumping in response to surface water supply shortages would reduce member units' ability to provide groundwater substitution transfers. In NYI Schedule 6 years, the member units have agreed to pump 30,000 acre-feet of groundwater substitution, regardless of the buyers' ability to take the water.

Yuba Accord water transfers provide valuable supplemental water supplies to CVP and SWP water users, particularly in dry and critical years when CVP and SWP water users' supplies from other sources become more scarce.

Downstream from Yuba River

The Yuba River joins the Feather River near Marysville, the Feather River flows into the Sacramento River near Vernona, and the Sacramento River flows into the Delta. DWR operates Oroville Reservoir on the Feather River upstream from the Yuba River; New Bullards Bar and Oroville dams operate cooperatively during flood events through the F-CO Program to ensure flows below the Yuba and Bear rivers remain below thresholds defined in the two dams' USACE WCMs. While Existing Condition flows are relatively small compared to those in the Feather and Sacramento rivers, Yuba River flows contribute towards CVP and SWP's operations to meet Delta water quality and flow requirements. Portions of Yuba River outflow that are not transferable are available to downstream water right holders, including DWR and Reclamation.

5.5.1.2 Future Baseline

Under the Future Baseline, operations would be essentially identical as those under Existing Conditions, except NID and PG&E would operate their respective projects to meet their proposed FERC 4(e) flow requirements, which are higher than their existing FERC requirements, and thus their releases would be increased when operations are driven by minimum flows, and flows in the Middle Yuba River above Our House Diversion Dam and the South Yuba River above Englebright would be similarly increased. These increased inflows would result in lower releases from the New Colgate Powerhouse when the YRDP and Narrows Project were operating to meet lower Yuba River flow requirements and water supply deliveries, but would potentially increase New Bullards Bar Reservoir releases when it was in a storage management mode due to potentially higher flows in the Lohman Ridge and Camptonville tunnels.

Baseline operations for Future Baseline would be based on the same inflows to the YRDP and Narrows Project as the Future Baseline, but with operations to meet the Baseline operations, as defined in the Yuba Accord Water Purchase Agreement.

5.5.1.3 Proposed Project

Under the Proposed Projects, the YRDP and Narrows Project would be operated similarly to the Existing Conditions and the Future Baseline, but to meet the YRDP FERC FEIS license conditions described in Chapter 2.

5.5.1.3.1 Areas Upstream of Englebright Dam

Our House and Log Cabin Diversion Dams

Operations at the Our House Diversion Dam would change the most under the YRDP FERC FEIS conditions. In addition to higher flow requirements downstream from the dam included in the FERC FEIS, the spill cessation, sediment transport, and recreational flow requirements would also necessitate increased releases at times. Lastly, FERC FEIS license conditions would require the closure of the Lohman Ridge Tunnel at times. Each of these actions would reduce the volume of Yuba Water's diversions from the Middle Yuba River into Oregon Creek and New Bullards Bar Reservoir, and increase flows from the Middle Yuba River into Englebright Reservoir.

The Log Cabin Diversion Dam on Oregon Creek has similar increases in flow requirements downstream from the dam, along with sediment transport and spill cessation measures, each of which would increase flows in Oregon Creek and subsequently the Middle Yuba River, while reducing diversions through the Camptonville Tunnel to New Bullards Bar Reservoir.

New Bullards Bar Dam and Reservoir

The FERC FEIS includes similar increases in required flows in the North Yuba River downstream from New Bullards Bar Dam, along with a spill cessation measure that will increase New Bullards Bar Dam releases to the North Yuba River. When combined with the increased flows in the Middle Yuba River and Oregon Creek and decreased Lohman Ridge and Camptonville Tunnel flows, there would be a reduction in New Colgate Powerhouse releases. The increased flows from the Middle Yuba River and Oregon Creek as a result of Yuba Water's FERC FEIS license conditions on Our House and Log Cabin diversion dams would displace releases from the New Colgate Powerhouse towards the lower Yuba River flow requirements and agricultural water supply deliveries. With less tunnel flows, there would be a small reduction in New Bullards Bar Reservoir storage management releases. Operations for flood management would continue to be governed by the USACE WCM. The ARC Spillway, if constructed, would improve Yuba Water's flexibility for operating during high-flow events by increasing the release capacity from New Bullards Bar Dam near the bottom of the flood reservation space. This increased capacity would be used to make larger releases at the beginnings of flood events and reducing the peak flows at the height of the flood events.

5.5.1.3.2 Lower Yuba River

Englebright Dam and Reservoir

Englebright Dam and Reservoir would be operated similarly as under the Existing Conditions, with similar overall priorities. Reservoir elevations would be managed to similar levels, and release decisions through the Narrows 1 and Narrows 2 powerhouses would be the same.

Lower Yuba River Flows

While required flows would be different, the YRDP and Narrows Project would operate for the Proposed Projects as described for the Existing Condition scenario, with similar overall priorities. While there might be slight differences in end-of-September storage, relative to the Existing Condition, the NYI would not consistently be higher or lower than under the Existing Condition. These changes in end-of-September storage could precipitate changes in the following year's NYI,

described in Section 5.3.2.2. If the end-of-September storage were reduced enough to trigger a higher NYI schedule, the following year's flow requirements would be reduced relative to the Existing Conditions.

Flow requirements in the lower Yuba River are very similar to those under Existing Conditions. The Schedule 6 flow requirements in June through August have been increased, but due to the required groundwater substitution transfers under Existing Conditions, flows in the river would not be substantially different. Yuba Water could elect to meet the Schedule 6 FERC FEIS flow requirements through groundwater substitution transfers or through storage releases from New Bullards Bar Reservoir. The FERC FEIS Englebright Dam-release flow fluctuation and ramping requirements will slightly extend releases during relatively wet years, particularly during New Bullards Bar Reservoir storage management operations, but will not significantly affect operations in relatively dry years when operations are generally governed by flow requirements.

Agricultural Water Supply Deliveries

Operations to provide agricultural water supply deliveries would be the same under the Proposed Projects as under Existing Conditions. Differences in shortages would be a result of a change in New Bullards Bar Reservoir storage and changes in NYI schedules and the associated flow requirements.

Yuba Accord Transfers

The portion of the Proposed Projects flow considered potentially transferable is based on measured flows at the Marysville gage above the Transfer Baseline flow. Transfer Baseline operations for the Proposed Projects would be based on the same inflows to the YRDP and Narrows Project as the Existing Conditions, but with operations for the Transfer Baseline requirements, as defined in the Yuba Accord Water Purchase Agreement (Yuba Water and Reclamation 2007), rather than for the Proposed Projects' requirements. Operations to provide Yuba Accord transfers would be unaffected by the Proposed Project.

Downstream from Yuba River

Under the Proposed Projects, flows in the Feather and Sacramento rivers and Delta would essentially be the same as those under Existing Conditions and the effect of the Proposed Projects on downstream resources would effectively be the same as under Existing Conditions.

5.5.1.4 Proposed Projects Future Conditions

Under Proposed Projects future conditions, with NID's Yuba-Bear Project and PG&E's Drum-Spaulding Project both operating for their proposed FERC 4(e) license requirements, there would be additional inflows to the YRDP and Narrows Project on the Middle Yuba and South Yuba rivers. However, the relative effect of the Proposed Projects Future Condition compared to the Future Baseline would be similar to the Proposed Projects compared to the Existing Conditions. New Bullards Bar Reservoir releases would be for either flood management, to meet flow requirements and water supply deliveries, or to manage storage for an end-of-September storage target. Flows in the lower Yuba River and throughout the YRDP and Narrows project's area would be essentially the same or slightly higher as the YRDP and Narrows Projects re-operate in response to slight increases in inflows from the Middle Yuba and South Yuba rivers.

The YRDP and Narrows Project would operate for the Proposed Projects Future Conditions similarly as in the Proposed Projects scenario, with similar overall priorities. Operations for agricultural water supplies would be essentially the same under the Proposed Projects Future Conditions as under the Future Baseline.

The portion of the Proposed Projects Future Conditions flow considered potentially transferable is based on measured flows at the Marysville gage above the Baseline flow. Baseline operations for the Proposed Projects Future Conditions would be based on the same inflows to the YRDP and Narrows Project as the Future Baseline, but with operations to meet the Baseline operations, as defined in the Yuba Accord Water Purchase Agreement.

Similarly, operations for flood management would continue to be governed by the USACE WCM.

5.5.1.5 Alternative 1

Yuba Water's basic operations in Alternative 1 would be the same as under the Proposed Projects Future Conditions. Alternative 1 includes all of the Proposed Projects requirements and features, but includes several additional elements.

5.5.1.5.1 Areas Upstream of Englebright Dam

Alternative 1 assumes FERC would require 15,600 acre-feet of additional releases from the upstream projects above their respective proposed FERC 4(e) license requirements in the spring of dry and critical years. While Yuba Water has modeled these operations with 5,000 acre-feet on the Middle Yuba River and 10,600 acre-feet from the South Yuba River as a block of flow on top of minimum flows in April to provide a reasonable representation of inflows to the YRDP and Narrows Project for use in evaluating the effects of changes in Yuba-Bear and Drum-Spaulding projects' flow regimes on YRDP and Narrows Project resource areas, the actual distribution and timing of the additional block of water would be subject to FERC's determination and consultation with applicable regulatory agencies. Under this consultation between FERC and the resource agencies, it is likely the water volume would be released to maximize the beneficial use of the water on local environmental resources within the tributaries, similar to a spring freshet, rather than as the block of flow currently represented in the modeling. A change of this nature would not negatively affect YRDP or Narrows Project operations, nor the analysis conducted for this evaluation as long as the flow was distributed over a reasonable duration of approximately 30-45 days in the April through May timeframe.

Similarly, while the Yuba-Bear and Drum-Spaulding projects export substantial volumes of water from the Yuba River watershed utilizing many reservoirs spread over a large geographic area with a range of storage capacities, Yuba Water's analysis assumes the increased flows for Alternative 1 would be a result of decreased storage in Jackson Meadows, Bowman, and Spaulding reservoirs rather than any modification to out-of-basin diversions or from other Yuba-Bear and Drum-Spaulding project reservoirs. NID and PCWA have flexible options for addressing any real reductions in those exports, such as through conservation or increased use of other surface water or groundwater supplies. Under a more refined analysis, many variations of water management decisions could be made to balance reservoir storage for recreational or water temperature benefit with water supply deliveries under consultation with FERC and resource agencies.

To the extent possible, the additional release from the Middle Yuba River would be diverted into the Lohman Ridge Tunnel and into New Bullards Bar Reservoir for release later in the year. If the tunnel was already full, the water would be released down the Middle Yuba River and would displace similar releases from New Bullards Bar Reservoir, if operations were for flow requirements below Englebright Dam.

New Bullards Bar Dam and Reservoir

The increased volume of inflow from NID and PG&E's projects would either be diverted into New Bullards Bar Reservoir, or used to offset releases from New Bullards Bar Reservoir. In dry and critical years, New Bullards Bar Reservoir typically operates to meet flow requirements and agricultural water supplies in the lower Yuba River rather than for storage management; as long as the releases from upstream projects were within Yuba Water's ability to re-regulate them in New Bullards Bar and Englebright Reservoir, the increased inflow would result in slightly increased storage in New Bullards Bar Reservoir until they were released in the fall, after which time New Bullards Bar Reservoir storage would be essentially the same as under the Proposed Projects Future Condition.

While unusual in dry and critical years, if New Bullards Bar would otherwise have been operated to meet a 650,000 acre-foot end-of-September storage target, Yuba Water would operate for an end-of-September storage of 655,200 acre-feet, an increase of 5,200 acre-feet, or the equivalent of 175 cfs for the first 15 days of October, so that New Bullards Bar Reservoir storage would be essentially the same as under the Proposed Projects Future Condition on October 15, with the exception of any differences in reservoir evaporation.

Alternative 1 includes a measure to increase Englebright Reservoir water surface elevations in the fall of dry and critical years to provide for improved water temperatures in the lower Yuba River. New Bullards Bar Reservoir would increase releases starting on August 26 with the intent of raising Englebright Reservoir's water surface elevation by September 9. Englebright Reservoir water surface elevation would be maintained around 525 feet through October 15, at which time New Bullards Bar Reservoir releases would slowly be decreased, allowing Englebright Reservoir's water surface elevation to drop back to 519 feet by November 1. After reducing Englebright Reservoir water surface back to 519 feet, New Bullards Bar Reservoir storage would be essentially the same as under the Proposed Projects Future Condition, with the exception of any difference in reservoir evaporation.

Operations for flood management would continue to be governed by the USACE WCM.

5.5.1.5.2 Lower Yuba River

Englebright Dam and Reservoir

Under Alternative 1, Englebright Dam and Reservoir would be operated similarly as under the Existing Conditions, with similar overall priorities. Release decisions through the Narrows 1 and Narrows 2 powerhouses would be the same.

As described above, Yuba Water assumed a portion of the additional releases from the Yuba-Bear and Drum-Spaulding projects would be to the South Yuba River. Increased inflow to Englebright Reservoir from the South Yuba River would generally offset releases from the New Colgate

Powerhouse, total Englebright Reservoir inflow and outflow during this period would remain essentially the same as under the Proposed Project.

However, under Alternative 1, Yuba Water would increase the elevation of Englebright Reservoir from its normal operating elevation of approximately 519 feet to 525 feet between September 9 and October 15 in dry and critical years. New Bullards Bar Reservoir's operations for this measure are described above. Actions to increase Englebright Reservoir's water surface elevation would be driven by New Bullards Bar Reservoir operations; releases from the Narrows 1 and Narrows 2 powerhouses would not change in response to the variations in water surface elevation.

Lower Yuba River Flows

Under Alternative 1, the YRDP and Narrows Project would operate similarly as described for the Proposed Projects Future Condition scenario, with similar overall priorities. However, under Alternative 1, Yuba Water would include a 175 cfs increased flow requirement at Smartsville and Marysville between September 1 and October 15 to provide improved water temperature conditions compared to the Proposed Projects Future Conditions. The 175 cfs requirement would be additive to whatever other required flow there was at the Marysville gage. 175 cfs for 45 days represents 15,619 acre-feet of water, essentially the same volume FERC would require from the upstream projects earlier in the year.

Agricultural Water Supply Deliveries

Operations to provide agricultural water supply deliveries would be the same under Alternative 1 as under the Proposed Projects Future Conditions. Any differences in shortages would be a result of a change in New Bullards Bar Reservoir storage.

Yuba Accord Transfers

The portion of Alternative 1 flow considered potentially transferable is based on measured flows at the Marysville gage above the Transfer Baseline flow. Transfer Baseline operations for Alternative 1 would be based on the same inflows to the YRDP and Narrows Project as Alternative 1, including the 15,600-acre-foot release from upstream projects in dry and critical years. With verification of the released volume from the upstream projects, Alternative 1's 175 cfs of additional flow above the Smartsville and Marysville flow requirement between September 1 and October 15 is assumed to be applied to the Transfer Baseline conditions as well, so it would not result in any additional transferrable flow for Yuba Water.

Downstream from Yuba River

Under Alternative 1, flows in the Feather and Sacramento rivers and Delta would essentially be the same as those under the Future Baseline, and the effect of Alternative 1 on downstream resources would effectively be the same as under Existing Conditions.

5.5.1.6 Alternative 2

Yuba Water's basic operations under Alternative 2 would be similar to the Proposed Projects Future Conditions, but would be impaired by Yuba Water's required implementation of that alternative. Alternative 2 includes all of the Proposed Projects requirements and assumes NID and PG&E's projects would be operated to meet their proposed FERC 4(e) requirements, with several additional

elements described as Sacramento/Delta Tributary Inflow and Cold Water Habitat Objectives within the SWRCB Program of Implementation (POI) in Chapter 4 of the latest draft of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed (SWRCB 2024). The POI includes a regulatory pathway, described in Section 4.4.2.

There is substantial uncertainty around how the SWRCB regulatory pathway would be implemented. Modeling for Alternative 2 assumes that Yuba Water would operate generally consistently with current operational paradigms, but the substantial changes in underlying requirements would likely result in substantial changes to operational practices with even greater emphasis on protecting future stored water supplies than current practices.

The SWRCB regulatory pathway includes an assumption that 55% of the unimpaired flow would be provided at three locations in the Yuba River watershed: (1) on the Middle Yuba River at its confluence with the North Yuba River; (2) on the South Yuba River at Jones Bar; and (3) on the Yuba River near Marysville. The approach for representing flows at each location is described below.

5.5.1.6.1 Areas Upstream of Englebright Dam

Our House and Log Cabin Diversion Dams

Under this analysis, NID's releases from the Milton Diversion Dam would be to meet their proposed FERC 4(e) requirements, and the 55% unimpaired flow at the mouth of the Middle Yuba River would be met through a combination of accretions between the Milton Diversion Dam and Our House Dam, accretions between Our House and Log Cabin Dams and the confluence of the Middle Yuba and North Yuba rivers, and Lohman Ridge Tunnel closures. While this would likely result in substantial reductions in out-of-basin diversions from the Yuba-Bear and Drum-Spaulding projects, since the implementation of the SWRCB regulatory pathway would be a result of SWRCB's processes, potential water supply reductions resulting from reductions in out-of-basin diversions are not evaluated in this report.

New Bullards Bar Dam and Reservoir

The unimpaired flow requirement on the Yuba River near Marysville would primarily be met through increased releases from New Bullards Bar Dam. New Bullards Bar Dam releases for the unimpaired flow requirement would be limited to its release capacity from the New Colgate Powerhouse and any flood management spills.

In addition to a 55% unimpaired flow requirement at the three locations described above, Alternative 2 includes an end-of-September storage requirement of 600,000 acre-feet in wet, above normal, and below normal years, and 400,000 acre-feet in dry and critical years. Agricultural water supply deliveries would be reduced as needed to meet the 600,000- or 400,000-acre-foot storage requirements.

The unimpaired flow requirement on the South Yuba River would be met through increased releases from Bowman and Spaulding dams and accretions upstream from Jones Bar. The division between Bowman and Spaulding Dams is based on their respective portion of unimpaired flows upstream from the dams.

Operations for flood management would continue to be governed by the USACE WCM.

5.5.1.6.2 Lower Yuba River

Englebright Dam and Reservoir

Englebright Dam would spill as needed to ensure adequate flows near Marysville. This would likely require that Englebright Reservoir storage be maintained closer to the top of Englebright Dam in winter months so it could spill the required flows when needed. General operations of the Narrows 1 and Narrows 2 powerhouses would not be affected by Alternative 2.

Lower Yuba River Flows

Under Alternative 2, Yuba River flow below Englebright Dam would be substantially higher in the spring in response to the 55% unimpaired flow requirement near Marysville. The Proposed Projects flow requirements would be maintained under Alternative 2, but the increased spring flows would reduce the extent to which flows exceed required flows due to lower storage in New Bullards Bar Reservoir.

Agricultural Water Supply Deliveries

Since Englebright Dam releases would be limited to inflows from the New Colgate Powerhouse, the Middle Yuba River, and the South Yuba River, agricultural diversions would be reduced as needed to provide 55% of basin-wide unimpaired flow near Marysville. Similarly, agricultural water supply diversions would be reduced, as needed, so New Bullards Bar Reservoir can reach its end-of-September storage requirements. While shortages were limited to 50% of demand under operations for the Existing Condition, Future Baseline, Proposed Projects and Alternative 1, diversions as low as 2% of demand are used to meet the Alternative 2 storage requirements.

Yuba Accord Transfers

While Alternative 2 could result in increased flows relative to the Alternative 2 Transfer Baseline, primarily due to differences in July through September flow requirements that are the Yuba Accord required flows with the changes included in the FERC FEIS, Yuba Water would not participate in groundwater substitution transfers out of the necessity of protecting local groundwater supplies combined with SGMA. Furthermore, Yuba Water would make every effort to protect its local water supplies, so New Bullards Bar Reservoir storage operations, including under the Alternative 2 Transfer Baseline, would likely be different from current operations, but the lack of detail in how the SWRCB regulatory pathway would be implemented makes it speculative to say exactly what those operational changes would be. Additionally, there is substantial uncertainty about how the CVP and SWP operations would respond to the SWRCB regulatory pathway, and under what conditions transfers would be possible. As a result, it is reasonable to assume there would not be any Yuba Accord transfers under Alternative 2. Since Yuba Accord transfers provide a meaningful water supply benefit to SWP and CVP contractors, this would reduce water supply availability to those water users.

Downstream from Yuba River

Under Alternative 2, there would be substantially more flow from the Yuba River into the Feather River in the spring and substantially less in the summer. If the SWRCB regulatory pathway was in

place, it is likely other reservoirs in the Sacramento Valley, including Oroville Reservoir, would similarly be operating to meet an unimpaired flow-based alternative, in which case the Yuba River contribution to the Feather and Sacramento Rivers and Delta would remain relatively small. The reduction in non-transferable Yuba River flow in summer months would reduce water availability to other water users and would potentially require the SWP and CVP to increase releases from their respective reservoirs to ensure Delta water quality and flow requirements were met.

If the SWRCB pathway was applied to the Yuba River alone, then the Yuba River contribution would result in substantially higher Feather and Sacramento River flows into the Delta in the spring, and moderately less in the summer.

5.5.1.7 No Project Alternative

Under the No Project Alternative, Yuba Water would not operate to meet any FERC-related requirements, and operations would instead be based on meeting requirements described in water rights and agreements. Differences between the No Project Alternative and the Existing Condition isolate the effects of Yuba Water being able to generate electricity rather than just operate to achieve its flood-control and water-supply missions as identified in the Yuba County Water Agency Act. As discussed below, there are few, if any, environmental effects that are attributable specifically to Yuba Water's continued generation of hydroelectricity. For the most part, descriptions of the Existing Condition from Section 5.5.1.1 remain applicable under the No Project Alternative. Further details are provided below.

5.5.1.7.1 Areas Upstream of Englebright Dam

Our House and Log Cabin Diversion Dams

Operations at Our House and Log Cabin diversion dams would be to meet flow requirements included in Yuba Water's 1965 Agreement with CDFW which are included in Yuba Water's consumptive water rights. Requirements in the 1965 Agreement mirror those in the existing YRDP FERC license, resulting flows below Our House and Log Cabin diversion dams would be the same as under Existing Conditions. Diversions into the Lohman Ridge and Camptonville Tunnels, while not providing any hydropower generation value from the New Colgate Powerhouse, would be maintained the same as under Existing Conditions for storage in New Bullards Bar Reservoir for subsequent water supply and water temperature management.

New Bullards Bar Dam and Reservoir

New Bullards Bar Dam and Reservoir operations would be the same as under Existing Conditions, and operations for flood management would continue to be governed by the USACE WCM.

Due to Yuba Water's Yuba Accord water transfer program, New Bullards Bar Reservoir would be operated to meet the same storage targets as under the Existing Conditions. Yuba Water would deliver water from New Bullards Bar Reservoir for member unit water supplies without shortages unless end-of-September storage was forecasted to be less than 440,000 acre-feet in the first year of a drought or 400,000 acre-feet in subsequent drought years.

5.5.1.7.2 Lower Yuba River

Englebright Dam and Reservoir

Under the No Project Alternative, at Englebright Dam and Reservoir without the Narrows 1 and 2 powerhouses, Yuba Water would either make releases through the Narrows 2 Full Flow Bypass, from the Narrows 1 Powerhouse bypass, or through spills at Englebright Dam. Because New Colgate Powerhouse would not be operating for peaking and ancillary services, releases from New Bullards Bar Reservoir would likely be at more even rates, resulting in less storage and water level fluctuations throughout the day and week. Total flow below Englebright Dam would continue to be based on releases from New Bullards Bar Dam and inflow from the South Yuba and Middle Yuba Rivers for either New Bullards Bar Reservoir storage management or to meet lower Yuba River flow requirements and water supply deliveries.

Lower Yuba River Flows

With similar release capacity from Englebright Dam under the No Project Alternative, lower Yuba River flows would continue to be made for the Smartsville and Marysville flow requirements described in the Yuba Accord and agricultural water supply deliveries from diversion points near Daguerre Point Dam. Flow fluctuation and ramping constraints are similarly contained in the Yuba Accord.

Agricultural Water Supply Deliveries

Water supply deliveries would continue as under the Existing Conditions scenario. With release capacity from New Bullards Bar Dam maintained through a New Colgate energy dissipation device, shortages would be based on periods when New Bullards Bar Reservoir storage was projected to fall below 440,000 acre-feet in the first year of a drought or 400,000 acre-feet in subsequent years. Shortages under No Project Alternative would continue to be limited to a maximum of 50% of total annual demand. Groundwater would be pumped, up to the region's pumping capacity, to make up any shortages in surface water deliveries.

Yuba Accord Transfers

Assuming that the SWRCB approves Yuba Water's pending petition to extend the term of Yuba Accord transfers, those transfers would continue uninterrupted under the No Project Alternative. Since Yuba Water would be maintaining its release capacity from New Bullards Bar Dam, Yuba Accord transfers would be the same as under Existing Conditions.

Downstream from Yuba River

Under the No Project Alternative, flows in the Feather and Sacramento rivers and Delta would essentially be the same as those under Existing Conditions and the effect of the No Project Alternative on downstream resources would effectively be the same as under Existing Conditions.

5.5.2 Proposed Projects compared to the Existing Condition

Operations under Existing Conditions are summarized in Section 5.5.1.1, and operations under the Proposed Projects are summarized in Section 5.5.1.3.

As described in Section 5.4.1.1, there are not expected to be any construction-related effects by the Proposed Projects on water supplies.

YRDP Impact SW-PP-1: Rate or Amount of Surface Runoff from YRDP Operations

Under the Proposed Project, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of the Proposed Projects on individual flood events might be slightly different from under the Existing Condition, the Proposed Projects would not substantially increase the rate or amount of surface runoff from YRDP operations.

Accordingly, impacts for surface runoff would be **less than significant**. No CEQA mitigation is required.

YRDP Impact SW-PP-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design, impede or redirect flood flows. However, since the YRDP would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property. With the addition of the ARC Spillway, as discussed in its EIR, the Proposed Projects would potentially reduce peak flows.

Accordingly, impacts for flood flows for the YRDP would be **less than significant**, and with the addition of the ARC Spillway, **potentially beneficial**. No CEQA mitigation is required.

YRDP Impact SW-PP-3: Water Supply Shortages from YRDP Operations

Under modeled conditions for both the Existing Condition and Proposed Projects, there would be agricultural water supply shortages to Yuba Water member units in four years out of the period of record. The Proposed Projects would result in reductions in agricultural water supply shortages in 1977 relative to the Existing Conditions, but would result in increased shortages in the other three years, 2014, 2015, and 2021, with a peak increase of 26,615 acre-feet in 2015. However, while the average annual shortage would increase by approximately 700 acre-feet per year, there would not be an increase in the frequency of shortages between the two scenarios. Table 5.5-1 shows annual shortages for the Proposed Projects and Existing Conditions for the four years with shortages within the simulation period of record.

Table 5.5-1. Comparison of Simulated Annual Surface Water Supply Shortages for the Proposed Projects Relative to the Existing Condition.

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Existing Condition	Proposed Projects	
1977	139,644	133,555	-6,089
2014	123,813	130,300	6,487
2015	42,902	69,516	26,615
2021	30,009	37,781	7,772

Key: AF = Acre-feet

Modeled shortages in 1977 conditions would be decreased relative to the Existing Condition. In other modeled years, shortages under the Proposed Projects would be greater than under Existing Conditions, while occurring at a similar frequency, but as shown in Chapter 6, would not result in

groundwater levels falling below local management levels. Accordingly, Proposed Projects impacts for the YRDP would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact SW-PP-4: Yuba Accord Transfers Resulting from YRDP Operations

The Proposed Projects would slightly reduce Yuba Accord stored water transfers compared to the Existing Condition on both a long-term average, and on a dry and critical year average. Table 5.5-2 shows a comparison of average annual Yuba Accord stored water transfers for the Proposed Projects and Existing Conditions for all years, and in dry and critical years.

Table 5.5-2. Comparison of Average Annual and Dry and Critical Year Yuba Accord Stored Water Transfers for the Proposed Projects Relative to the Existing Condition.

	Existing Condition (AF)	Proposed Project (AF)	Change from Basis of Comparison (AF)	Percent Change from Basis of Comparison (%)
Average All Years	44,638	43,444	-1,194	-3
Dry and Critical Years	48,655	46,191	-2,465	-5

Key: AF = Acre-feet

While there would be small reductions in Yuba Accord transfer volumes under the Proposed Project, the changes are less than 20%. Accordingly, Proposed Projects impacts for the YRDP would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact SW-PP-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River, the Narrows Project does not noticeably affect flows below Englebright Dam during high-flow events.

Impacts of the Narrows Project under the Proposed Projects would be **less than significant** on the rate or amount of runoff downstream from Englebright Dam. No CEQA mitigation is required.

Narrows Impact SW-PP-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River, the Narrows Project does not noticeably affect flows below Englebright Dam during high-flow events.

Impacts of the Narrows Project under the Proposed Projects would be **less than significant** on flood flows downstream from Englebright Dam. No CEQA mitigation is required.

Narrows Impact SW-PP-3: Water Supply Shortages from Narrows Operations

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet the Proposed YRDP Project requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to the Proposed Narrows Project.

Accordingly, Proposed Projects impacts for the Narrows Project would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact SW-PP-4: Yuba Accord Transfers Resulting from Narrows Operations

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet the Proposed YRDP Project requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible effects on water transfers attributable to the Proposed Narrows Project.

Accordingly, Proposed Projects impacts for the Narrows Project would be **less than significant**, and no CEQA mitigation is required.

5.5.3 Proposed Projects Compared to the Future Baseline

Operations under the Future Baseline are summarized in Section 5.5.1.2, and operations under the Proposed Projects Future Conditions are summarized in Section 5.5.1.4.

As described in Section 5.4.1.1, there are not expected to be any construction-related effects by the Proposed Projects on water supplies.

YRDP Impact SW-FPP-1: Rate or Amount of Surface Runoff from YRDP Operations

Under the Proposed Projects, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of the Proposed Projects on individual flood events might be slightly different from under the Future Baseline, the Proposed Projects would not increase the flood risk nor create flooding for downstream communities.

Accordingly, impacts for surface runoff would be **less than significant**. No CEQA mitigation is required.

YRDP Impact SW-FPP-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design impede or redirect flood flows. However, since the Proposed Projects would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property.

Accordingly, impacts for flood flows for the YRDP would be **less than significant**, and with the addition of the ARC Spillway, **potentially beneficial** No CEQA mitigation is required.

YRDP Impact SW-FPP-3: Water Supply Shortages from YRDP Operations

The Proposed Projects would reduce agricultural water supply shortages under hydrologic conditions for the modeled year of 1977 relative to the Future Baseline, but would result in increases in shortages in the modeled years of 2014, 2015, and 2021, with a peak increase of 27,502 acre-feet. However, while there would be an increase in average annual shortages of approximately 700 acre-feet per year, there would not be an increase in the frequency of shortages under the Proposed Projects, relative to the Future Baseline. Table 5.5-3 shows annual shortages for the Proposed Projects and Future Baseline for the four years with shortages.

Table 5.5-3. Comparison of Simulated Annual Surface Water Supply Shortages for the Proposed Projects Relative to the Future Baseline.

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Future Baseline	Proposed Project	
1977	139,644	133,530	-6,114
2014	59,548	65,419	5,871
2015	29,185	56,688	27,502
2021	4,673	12,918	8,245

Key: AF = Acre-feet

Modeled shortages in 1977 conditions would be decreased relative to the Future Baseline. In other modeled years with shortages, shortages under the Proposed Projects would be greater than under Future Baseline, and shortages would occur at a similar frequency, but as shown in Chapter 6, would not result in groundwater levels falling below local management levels. Accordingly, Proposed Projects impacts for the YRDP would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact SW-FPP-4: Yuba Accord Transfers Resulting from YRDP Operations

The Proposed Projects would slightly reduce Yuba Accord stored water transfers compared to the Future Baseline on both a long-term average, and on a dry and critical year average. Table 5.5-4 shows a comparison of average annual Yuba Accord stored water transfers for the Proposed Projects and Future Baseline for all years, and in dry and critical years.

Table 5.5-4. Comparison of Average Annual and Dry and Critical Year Yuba Accord Stored Water Transfers for the Proposed Projects Relative to the Future Baseline.

	Future Baseline (AF)	Proposed Project (AF)	Change from Basis of Comparison (AF)	Percent Change from Basis of Comparison (%)
Average All Years	36,968	36,650	-318	-1
Dry and Critical Years	36,865	35,489	-1,376	-4

Key: AF = Acre-feet

While there would be small reductions in Yuba Accord transfer volumes under the Proposed Project, the changes are less than 20%. Accordingly, Proposed Projects impacts for the YRDP would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact SW-FPP-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River, the Narrows 1 does not noticeably affect lower Yuba River flows during high-flow events.

Impacts of the Narrows Project under the Proposed Projects would be **less than significant** on the rate or amount of runoff downstream from Englebright Dam. No CEQA mitigation is required.

Narrows Impact SW-FPP-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River, the Narrows 1 does not noticeably affect lower Yuba River flows during high-flow events.

Impacts of the Narrows Project under the Proposed Projects would be **less than significant** on flood flows downstream from Englebright Dam. No CEQA mitigation is required.

Narrows Impact SW-FPP-3: Water Supply Shortages from Narrows Operations

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet the Proposed YRDP Project requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to the Proposed Narrows Project.

Accordingly, Proposed Projects impacts for the Narrows Project would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact SW-FPP-4: Yuba Accord Transfers Resulting from Narrows Operations

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet the Proposed YRDP Project requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible effects on water transfers attributable to the Proposed Narrows Project.

Accordingly, Proposed Projects impacts for the Narrows Project would be **less than significant**, and no CEQA mitigation is required.

5.5.4 Alternative 1 compared to the Existing Condition

Operations under Existing Conditions are summarized in Section 5.5.1.1, and operations under Alternative 1 are summarized in Section 5.5.1.5.

As described in Section 4.4, this comparison is misleading for the water resources analysis; it is provided for informational purposes only.

As described in Section 5.4.1.1, there are not expected to be any construction-related effects by Alternative 1 on water supplies.

YRDP Impact SW-Alt1-1: Rate or Amount of Surface Runoff from YRDP Operations

Under Alternative 1, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of Alternative 1 on individual flood events might be slightly different from under the Existing Condition, Alternative 1 would not increase the flood risk nor create flooding for downstream communities.

YRDP Impact SW-ALT1-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design impede or redirect flood flows. However, since Alternative 1 would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property. Inclusion of the ARC Spillway could reduce the magnitude of flood flows.

YRDP Impact SW-Alt1-3: Water Supply Shortages from YRDP Operations

Alternative 1 would reduce agricultural water supply shortages under hydrologic conditions for 1977, 2014, and 2021 relative to the Existing Conditions, but would result in increases in shortages in 2015, with a peak increase of 12,755 acre-feet. While average annual shortages would increase by approximately 1,100 acre-feet per year, there would be no change in the frequency of shortages between Alternative 1 and the Existing Condition. Table 5.5-5 shows annual shortages for Alternative 1 and Future Baseline for the four years with shortages.

Table 5.5-5. Comparison of Annual Surface Water Supply Shortages for the Proposed Projects Relative to the Future Baseline.

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Existing Condition	Alternative 1	
1977	139,644	133,530	-6,114
2014	123,813	69,016	-54,797
2015	42,902	55,657	12,755
2021	30,009	20,529	-9,480

Key: AF = Acre-feet

Modeled shortages under 1977, 2014, and 2021 conditions would be decreased relative to Existing Conditions. Under 2015 conditions, shortages under Alternative 1 would occur at a similar frequency, and would be greater than under Existing Conditions, but as shown in Chapter 6, would not result in groundwater levels falling below local management levels.

YRDP Impact SW-Alt1-4: Yuba Accord Transfers Resulting from YRDP Operations

Alternative 1 would decrease Yuba Accord stored water transfers compared to the Existing Condition on both a long-term average, and on a dry and critical year average. Table 5.5-6 shows a comparison of average annual Yuba Accord stored water transfers under Alternative 1 and the Existing Condition for all years, and in dry and critical years.

Table 5.5-6. Comparison of Average Annual and Dry and Critical Year Yuba Accord Stored Water Transfers for Alternative 1 Relative to the Existing Condition.

	Existing Condition (AF)	Alternative 1 (AF)	Change from Basis of Comparison (AF)	Percent Change from Basis of Comparison (%)
Average All Years	44,638	36,417	-8,221	-18
Dry and Critical Years	48,655	34,736	-13,920	-29

There would be sizeable decreases in Yuba Accord transfer volumes under Alternative 1 of greater than 20%.

Narrows Impact SW-Alt1-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River; without the Narrows Project, there would be an increased spill over Englebright Dam equivalent to the Narrows 1 Powerhouse capacity and no net change in lower Yuba River flows during high-flow events.

Narrows Impact SW-Alt1-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River, the Narrows Project would not noticeably affect flows below Englebright Dam during high-flow events.

Narrows Impact SW-Alt1-3: Water Supply Shortages from Narrows Operations

Under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations.

Narrows Impact SW-Alt1-4: Yuba Accord Transfers Resulting from Narrows Operations

Under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible effects on water transfers attributable to Narrows Project operations.

5.5.5 Alternative 1 Compared to the Future Baseline

Operations under the Future Baseline are summarized in Section 5.5.1.2, and operations under Alternative 1 are summarized in Section 5.5.1.5.

As described in Section 5.4.1.1, there are not expected to be any construction-related effects by Alternative 1 on water supplies.

YRDP Impact SW-FAlt1-1: Rate or Amount of Surface Runoff from YRDP Operations

Under Alternative 1, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of Alternative 1 on individual flood events might be slightly different from under the Future Baseline, Alternative 1 would not increase the flood risk nor create flooding for downstream communities.

Accordingly, impacts for surface runoff would be **less than significant**.

YRDP Impact SW-FAlt1-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design, impede or redirect flood flows. However, since Alternative 1 would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property.

Accordingly, impacts for flood flows for the YRDP would be **less than significant**, and with the addition of the ARC Spillway, **potentially beneficial**.

YRDP Impact SW-FAlt1-3: Water Supply Shortages from YRDP Operations

Alternative 1 would reduce agricultural water supply shortages under hydrologic conditions for 1977 relative to the Future Baseline, but would result in increases in shortages in 2014, 2015, and 2021, with a peak increase of 26,471 acre-feet. While average annual shortages would increase by approximately 900 acre-feet per year, there would be no change in the frequency of shortages between Alternative 1 and the Future Baseline. Table 5.5-7 shows annual shortages for Alternative 1 and the Future Baseline for the four years with shortages.

Table 5.5-7. Comparison of Annual Surface Water Supply Shortages for Alternative 1 Relative to the Future Baseline.

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Future Baseline	Alternative 1	
1977	139,644	133,530	-6,114
2014	59,548	69,016	9,468
2015	29,185	55,657	26,471
2021	4,673	20,529	15,856

Key: AF = Acre-feet

Modeled shortages in 1977 conditions would be decreased relative to the Future Baseline. In other modeled years, shortages under Alternative 1 would be greater than under Future Baseline while occurring at similar frequencies, but as shown in Chapter 6, would not result in groundwater levels falling below local management levels. Accordingly, Alternative 1 impacts for the YRDP would be **less than significant**.

YRDP Impact SW-FAlt1-4: Yuba Accord Transfers Resulting from YRDP Operations

Alternative 1 would slightly decrease Yuba Accord stored water transfers compared to the Future Baseline on both a long-term average, and on a dry and critical year average. Table 5.5-8 shows a comparison of average annual Yuba Accord stored water transfers for Alternative 1 and the Future Baseline for all years, and in dry and critical years.

Table 5.5-8. Comparison of Average Annual and Dry and Critical Year Yuba Accord Stored Water Transfers for the Alternative 1 Relative to the Future Baseline.

	Future Baseline (AF)	Alternative 1 (AF)	Change from Basis of Comparison (AF)	Percent Change from Basis of Comparison (%)
Average All Years	36,968	36,417	-551	-1
Dry and Critical Years	36,865	34,736	-2,130	-6

Key: AF = Acre-feet

While there would be small reductions in Yuba Accord transfer volumes under Alternative 1, the changes are less than 20%. Accordingly, Alternative 1 impacts for the YRDP would be **less than significant**.

Indirect Impact SW-FAlt1-1: Potential Water Supply Shortages for NID and PG&E customers from Alternative 1 YB/DS operations.

As described above, Alternative 1 assumes FERC would require 15,600 acre-feet of additional releases from NID and PG&E's projects above their respective proposed FERC 4(e) requirements in the spring of dry and critical years. Yuba Water has modeled these operations with 5,000 acre-feet on the Middle Yuba River and 10,600 acre-feet from the South Yuba River as a block of flow on top of minimum flows in April to provide a reasonable representation of inflows to the YRDP and Narrows Project for use in evaluating the effects of changes in Yuba-Bear and Drum-Spaulding projects' flow regimes on YRDP and Narrows Project resource areas. The actual distribution and timing of the additional block of water would be subject to FERC's determination and consultation with applicable regulatory agencies. Yuba Water's programmatic analysis conservatively assumes reductions in out-of-basin diversions could result in reductions in Yuba River water supply deliveries to NID and PCWA customers.

Yuba Water's modeling indicates there would be reductions in Spaulding Canals' diversions of at least 1% in 17 out of 52 years, and at least 5% in 4 years, with an average reduction of 2.6 TAF and a maximum of 10.5 TAF. These reductions in Spaulding Canals' diversions could potentially represent reductions in water supply deliveries to NID and PCWA customers. However, NID, PG&E and other water suppliers that use water exported from the Yuba River watershed via the Yuba-Bear and Drum-Spaulding projects would have various water management measures available to them, potentially in consultation with FERC and the resource agencies, to avoid significant water supply reductions.

Moreover, in response to reductions in supplies from the Yuba River watershed, it is reasonably foreseeable that NID water users could make up for reductions in Yuba River water supplies with a combination of additional groundwater pumping, conservation, and increased purchases from PG&E (NID 2021). PCWA could make up for shortages with a combination of additional groundwater pumping, conservation, and increased diversions from PCWA's Middle Fork Project (PCWA 2021).

Overall, it is likely that the reduced Spaulding Canal diversions under Alternative 1 would not result in significant reductions in water supplies to NID and PCWA water users, given available operational measures to avoid water supply reductions and available alternative water supplies. Accordingly, this impact would be **less than significant**.

Narrows Impact SW-FAlt1-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Impacts of the Narrows Project under Alternative 1 would be **less than significant** on the rate or amount of runoff downstream from Englebright Dam.

Narrows Impact SW-FAlt1-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Impacts of the Narrows Project under Alternative 1 would be **less than significant** on flood flows downstream from Englebright Dam.

Narrows Impact SW-FAlt1-3: Water Supply Shortages from Narrows Operations

Under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations.

Accordingly, Alternative 1 impacts for the Narrows Project would be **less than significant**.

Narrows Impact SW-FAlt1-4: Yuba Accord Transfers Resulting from Narrows Operations

Under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible effects on water transfers attributable to Narrows Project operations.

Accordingly, Alternative 1 impacts for the Narrows Project would be **less than significant**.

5.5.6 Alternative 2 Compared to Existing Condition

Operations under Existing Conditions are summarized in Section 5.5.1.1, and operations under Alternative 2 are summarized in Section 5.5.1.6.

As described in Section 4.4, this comparison is misleading for the water resources analysis; it is provided for informational purposes only.

As described in Section 5.4.1.1, there are not expected to be any construction-related effects by the Alternative 2 on water supplies.

YRDP Impact SW-Alt2-1: Rate or Amount of Surface Runoff from YRDP Operations

Under Alternative 2, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of Alternative 2 on individual flood events might be slightly different from under the Existing Condition, Alternative 2 would not increase the flood risk nor create flooding for downstream communities.

YRDP Impact SW-ALT2-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design impede or redirect flood flows. However, since Alternative 2 would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property.

YRDP Impact SW-Alt2-3: Water Supply Shortages from YRDP Operations

Alternative 2 would result in agricultural water supply shortages under hydrologic conditions for 49 out of the 52 years in the period of record, and the average annual shortage would increase by approximately 45,000 acre-feet per year. Shortages under Alternative 2 would increase in all of those 49 years, relative to the Existing Conditions, with a peak increase of 247,617 acre-feet in 1992. Table 5.5-9 shows a comparison of shortages under Alternative 2 and Existing Conditions. Years without shortages are not included in this table.

Under Alternative 2, there would a substantial increase in both the frequency and magnitude of shortages. As shown in Chapter 6, the reduction in surface water deliveries would result in increased groundwater pumping; the increased groundwater pumping to maintain a similar level of water supply for Yuba Water member units would result in groundwater levels dropping below local management levels for groundwater.

YRDP Impact SW-Alt2-4: Yuba Accord Transfers Resulting from YRDP Operations

While Alternative 2 might result in increased flows relative to the Alternative 2 Transfer Baseline, primarily due to differences in July through September flow requirements, Yuba Water would make every effort to protect its local water supplies, so New Bullards Bar Reservoir storage operations would likely be different from current operations, but it is speculative to say exactly what those operations would be. Additionally, there is substantial uncertainty about how the CVP and SWP operations would respond to the SWRCB POI, and under what conditions transfers would be possible. As a result, it is reasonable to assume there would not be any Yuba Accord transfers under Alternative 2.

Narrows Impact SW-Alt2-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Narrows Impact SW-Alt2-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Table 5.5-9. Comparison of Simulated Annual Surface Water Supply Shortages for Alternative 2 Relative to the Existing Conditions.

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Existing Conditions	Alternative 2	
1970	0	200,572	200,572
1971	0	1,150	1,150
1972	0	16,216	16,216
1973	0	840	840
1974	0	412	412
1975	0	727	727
1977	139,644	220,628	80,984
1978	0	2,069	2,069

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Existing Conditions	Alternative 2	
1979	0	750	750
1980	0	187	187
1981	0	210	210
1982	0	467	467
1983	0	194	194
1984	0	430	430
1985	0	75,241	75,241
1986	0	15,797	15,797
1987	0	94,340	94,340
1988	0	138,754	138,754
1989	0	41,156	41,156
1990	0	830	830
1991	0	118,966	118,966
1992	0	247,617	247,617
1993	0	1,486	1,486
1995	0	483	483
1996	0	645	645
1997	0	135,462	135,462
1998	0	699	699
1999	0	814	814
2000	0	19,310	19,310
2001	0	64,230	64,230
2002	0	2,141	2,141
2003	0	899	899
2004	0	72,278	72,278
2005	0	1,175	1,175
2006	0	448	448
2008	0	119,547	119,547
2009	0	202,457	202,457
2010	0	4,308	4,308
2011	0	238	238
2012	0	60,430	60,430
2013	0	1,997	1,997
2014	123,813	260,361	136,549
2015	42,902	243,751	200,850
2016	0	5,530	5,530
2017	0	326	326
2018	0	141,831	141,831
2019	0	1,788	1,788
2020	0	405	405
2021	30,009	145,661	115,652

Key: AF = Acre-feet

Narrows Impact SW-Alt2-3: Water Supply Shortages from Narrows Operations

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations.

Narrows Impact SW-Alt2-4: Yuba Accord Transfers Resulting from Narrows Operations

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible effects on water transfers attributable to Narrows Project operations.

5.5.7 Alternative 2 Compared to Future Baseline

Operations under the Future Baseline are summarized in Section 5.5.1.2, and operations under Alternative 2 are summarized in Section 5.5.1.6.1.

As described in Section 5.4.1.1, there are not expected to be any construction-related effects by Alternative 2 on water supplies.

YRDP Impact SW-FAlt2-1: Rate or Amount of Surface Runoff from YRDP Operations

Under Alternative 2, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of Alternative 2 on individual flood events might be slightly different from under the Future Baseline, Alternative 2 would not increase the flood risk nor create flooding for downstream communities.

Accordingly, impacts for surface runoff would be **less than significant**.

YRDP Impact SW-FALT2-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design impede or redirect flood flows. However, since Alternative 2 would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property.

Accordingly, impacts for flood flows for the YRDP would be **less than significant**, and with the addition of the ARC Spillway, **potentially beneficial**.

YRDP Impact SW-FAlt2-3: Water Supply Shortages from YRDP Operations

Alternative 2 would result in agricultural water supply shortages for 49 out of the 52 years in the period of record, with an average annual increase in water supply shortages of approximately 47,000 acre-feet per year. Shortages under Alternative 2 would be greater than the Future Baseline in all 49 years, with a peak increase of 247,617 acre-feet in 1992. Table 5.5-10 shows a comparison of shortages under Alternative 2 and Existing Conditions.

Table 5.5-10. Comparison of Annual Surface Water Supply Shortages for Alternative 2 Relative to the Future Baseline.

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Future Baseline	Alternative 2	
1970	0	200,572	200,572
1971	0	1,150	1,150
1972	0	16,216	16,216
1973	0	840	840
1974	0	412	412
1975	0	727	727
1977	139,644	220,628	80,984
1978	0	2,069	2,069
1979	0	750	750
1980	0	187	187
1981	0	210	210
1982	0	467	467
1983	0	194	194
1984	0	430	430
1985	0	75,241	75,241
1986	0	15,797	15,797
1987	0	94,340	94,340
1988	0	138,754	138,754
1989	0	41,156	41,156
1990	0	830	830
1991	0	118,966	118,966
1992	0	247,617	247,617
1993	0	1,486	1,486
1995	0	483	483
1996	0	645	645
1997	0	135,462	135,462
1998	0	699	699
1999	0	814	814
2000	0	19,310	19,310
2001	0	64,230	64,230
2002	0	2,141	2,141
2003	0	899	899
2004	0	72,278	72,278
2005	0	1,175	1,175
2006	0	448	448
2008	0	119,547	119,547
2009	0	202,457	202,457
2010	0	4,308	4,308
2011	0	238	238
2012	0	60,430	60,430
2013	0	1,997	1,997
2014	59,548	260,361	200,813
2015	29,185	243,751	214,566
2016	0	5,530	5,530

Calendar Year	Volume of Shortage (AF)		Change in Volume of Shortage from Basis of Comparison (AF)
	Future Baseline	Alternative 2	
2017	0	326	326
2018	0	141,831	141,831
2019	0	1,788	1,788
2020	0	405	405
2021	4,673	145,661	140,988

Key: AF = Acre-feet

As shown in Chapter 6, the increased frequency and magnitude of groundwater pumping to replace reductions in surface water supplies under Alternative 2 would result in groundwater levels falling below local management levels. While mitigation measures within the GSP could avoid groundwater-related impacts, they would not resolve water supply shortages. Accordingly, this impact would be **potentially significant and unavoidable**.

YRDP Impact SW-FAlt2-4: Yuba Accord Transfers Resulting from YRDP Operations

While Alternative 2 might result in increased flows relative to the Alternative 2 Transfer Baseline, primarily due to differences in July through September flow requirements, Yuba Water would make every effort to protect its local water supplies, so New Bullards Bar Reservoir storage operations would likely be different from current operations, but it is speculative to say exactly what those operations would be. Additionally, there is substantial uncertainty about how the CVP and SWP operations would respond to the SWRCB POI, and under what conditions transfers would be possible. As a result, it is reasonable to assume there would not be any Yuba Accord transfers under Alternative 2.

There would be no Yuba Accord transfers under Alternative 2, accordingly, Alternative 2 impacts for the YRDP would be **significant and unavoidable**.

Narrows Impact SW-FAlt2-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Impacts of the Narrows Project under Alternative 2 would be **less than significant** on the rate or amount of runoff downstream from Englebright Dam.

Narrows Impact SW-FAlt2-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Impacts of the Narrows Project under Alternative 2 would be **less than significant** on flood flows downstream from Englebright Dam.

Narrows Impact SW-FAlt2-3: Water Supply Shortages from Narrows Operations

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations.

Accordingly, Alternative 2 impacts for the Narrows Project would be **less than significant**.

Narrows Impact SW-FAlt2-4: Yuba Accord Transfers Resulting from Narrows Operations

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Narrows Project would not include additional flow requirements. As a result, there would be negligible effects on water transfers attributable to Narrows Project operations.

Accordingly, Alternative 2 impacts for the Narrows Project would be **less than significant**.

5.5.8 No Project Alternative Compared to the Existing Condition

As described in Section 5.5.1.7, operations of the YRDP and Narrows Project under the No Project Alternative would be essentially the same as under Existing Condition.

Operations of the Narrows Project do not materially affect operations of the YRDP; under a No Project Alternative for the Narrows Project, there would similarly be no material effects on operations of the YRDP.

YRDP Impact SW-NP-1: Rate or Amount of Surface Runoff from YRDP Operations

Under the No Project Alternative, the YRDP would continue to operate according to the USACE's New Bullards Bar Dam WCM. While the effect of the No Project Alternative on individual flood events might be slightly different from under the Existing Conditions, the No Project Alternative would not increase the flood risk nor create flooding for downstream communities.

Accordingly, impacts for surface runoff would be **less than significant**.

YRDP Impact SW-NP-2: Impede or Redirect Flood Flows

Operations of the YRDP would, by design impede or redirect flood flows. However, since the No Project Alternative would continue to operate according to the USACE New Bullards Bar Dam WCM, there would not be an increased flood risk to people or property.

Accordingly, impacts for flood flows for the YRDP would be **less than significant**.

YRDP Impact SW-NP-3: Water Supply Shortages from YRDP Operations

Yuba Water would operate New Bullards Bar Reservoir essentially the same under the No Project Alternative as under Existing Conditions. As a result, there would not be any noticeable effect on water supply deliveries from near Daguerre Point Dam. Shortages under the No Project Alternative would be effectively identical to the Existing Condition, operations for the No Project Alternative would have **less than significant impact** for water supply.

YRDP Impact SW-NP-4: Yuba Accord Transfers Resulting from YRDP Operations

Yuba Water would effectively operate New Bullards Bar Reservoir to meet Yuba Accord water transfers the same under the No Project Alternative as under Existing Conditions. As a result, there would not be any appreciable effect on Yuba Accord water transfers, so the No Project Alternative would have **less than significant impact** on water transfers.

Narrows Impact SW-NP-1: Rate or Amount of Surface Runoff from Narrows Operations

Englebright Reservoir storage is primarily a factor of YRDP operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Impacts of the Narrows Project under the No Project Alternative would be **less than significant** on the rate or amount of runoff downstream from Englebright Dam.

Narrows Impact SW-NP-2: Impede or Redirect Flood Flows

Englebright Reservoir storage is primarily a factor of New Bullards Bar Dam operations. While the Narrows Project contributes to release capacity at Englebright Dam, it does not regulate higher flows from Englebright Dam to the lower Yuba River.

Impacts of the Narrows Project under the No Project Alternative would be **less than significant** on flood flows downstream from Englebright Dam.

Narrows Impact SW-NP-3: Water Supply Shortages from Narrows Operations

Without the presence of the Narrows 1 Powerhouse, Yuba Water would be able to provide adequate flows to meet both the required flows and the agricultural water supply demand through either spills at Englebright Dam or through the Narrows 2 Full Flow Bypass.

Accordingly, No Project Alternative impacts for the Narrows Project would be **less than significant**.

Narrows Impact SW-NP-4: Yuba Accord Transfers Resulting from Narrows Operations

Without the presence of the Narrows 1 Powerhouse, Yuba Water would be able to provide adequate flows to meet required Yuba Accord transfer flows through either spills at Englebright Dam or through the Narrows 2 Full Flow Bypass.

Accordingly, No Project Alternative impacts for the Narrows Project would be **less than significant**.

5.6 Cumulative Impact Assessment

Hydrologic modeling was used to evaluate the potential cumulative effects of the Proposed Projects and alternatives in combination with other likely changes in operations on hydrology and water supply. The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment of the Proposed Projects' and alternatives cumulative

impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. To the extent feasible, potential cumulative impacts on resources dependent on hydrology or water supply (e.g., reservoir surface elevation) are analyzed quantitatively.

As described in Chapter 4, because several projects considered as part of the cumulative condition cannot be accurately characterized for hydrologic modeling purposes at this time, either due to the nature of the particular project or because specific operations details are only in the preliminary phases of development, these projects are evaluated qualitatively. Only those projects that could affect surface water resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to regional water supply operations, or water-related and water dependent resources that also could be affected by the Proposed Projects or alternatives (see Chapter 4). For this reason, only the limited numbers of projects with the potential to cumulatively impact surface water resources are specifically considered qualitatively in the cumulative impacts analysis for surface water resources:

FERC Hydropower Projects in the Yuba River Watershed

- South Feather Power Project (FERC Project 2088-068) Relicensing
- Yuba-Bear Hydroelectric Project (Yuba-Bear Project) (FERC Project No. 2266) Relicensing,
- Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310)
- Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing

Water Supply and Water Management Projects

- Yuba Subbasins Water Management Plan: A Groundwater Sustainability Plan (GSP) Implementation
- WWD In-Lieu Recharge Project
- Yuba County Integrated Regional Water Management Plan (IRWMP) Implementation
- Various Water Supply Improvement Projects

Water Transfer and Acquisition Programs

- Lower Yuba River Accord Water Transfer Program Extension

Flood Control Projects

- New Bullards Bar Dam ARC Spillway Project
- USACE NBB Dam and Reservoir Water Control Manual (WCM) Update

- 500-year Flood Protection Project
- Marysville Ring Levee
- Yuba River North Training Wall (NTW) Project
- Goldfields Multi-Benefit Project

Ecosystem Restoration and Fisheries Improvement Projects

- Bay-Delta Water Quality Control Plan Update – HR & L

5.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

5.6.1.1 Cumulative Impacts on Surface Water Resources Resulting from Construction Activities

Construction activities associated with the Proposed Projects under the YRDP Relicensing will occur in distinct locations from construction activities other projects considered for cumulative effects. Construction of the ARC Spillway or any levee modifications would be scheduled and include BMPs to minimize potential effects on YRDP or Narrows Project operations, particularly water supply and flood management operations, and to avoid any erosion or siltation effects. Hence, construction-related impacts of the YRDP and Narrows Projects are unlikely to cumulate with effects from other past, present, or reasonably foreseeable projects to adversely affect surface water resources.

5.6.1.2 Cumulative Impacts on Surface Water Resources from Operations

Under the Cumulative Condition, the YRDP Relicensing Project will change YRDP operations which influences reservoir storages, flows, and water supply deliveries in the YRDP Project Area. Narrows Project operations under the Cumulative Condition will effectively remain the same as under the Existing Condition. Implementation of NID and PG&E's proposed 4(e) license conditions have been considered through hydrologic modeling. All other projects considered in the surface water cumulative assessment are addressed qualitatively.

5.6.1.2.1 Areas Upstream from Englebright Dam

Relicensing of the Yuba-Bear and Drum-Spaulding projects has been explicitly incorporated in the modeling of the Proposed Projects Cumulative Condition; those projects would generally increase the volume of inflows to the YRDP and Narrows Project and would not reduce water supply deliveries to Yuba Water customers or Yuba Accord water transfers. The WCM Update could potentially result in increased flexibility of New Bullards Bar Reservoir operations, freeing up water for water supply deliveries. The WCM Update is designed to reduce flood risk.

5.6.1.2.2 Lower Yuba River and Downstream

The various water supply and water management projects listed in Section 5.6 are intended to individually improve the region's water supply management flexibility and to drive investments

towards improved water supply reliability. The projects should complement each other and provide a benefit for the region and downstream.

The Bay-Delta Water Quality Control Plan Update – HR&L (HR&L) program consists of flow and habitat actions. For the flow actions, Yuba Water has committed to releasing up to 50,000 acre-feet of water above the Yuba Accord flows in above normal, below normal, and dry years in the April through June period when New Bullards Bar Reservoir's forecasted end-of-September storage is over 600,000 acre-feet. The pattern of releases would be subject to the input from a science panel for fisheries-related benefits to the Yuba River and the Delta, but would generally be in the range of 300 cfs to 600 cfs across one to two months. In the year of a HR&L release, there would not be a noticeable effect on agricultural water supply deliveries since those would only be affected if end-of-September storage was forecasted to be below 440,000 acre-feet, and while there could potentially be a small reduction in Yuba Accord transfers, changes would not likely be substantive. Ending a year with reduced storage due to the HR&L program could have an effect on water supply deliveries in the following year if the following year was extremely dry, but since the North Yuba Index would reflect the lower end-of-September storage and water supply delivery shortages typically occur when the previous year's storage was lower than 600,000 acre-feet, the HR&L program would not contribute towards additional water supply shortages. Entering the winter with slightly lower storage could result in reduced New Bullards Bar Dam spills and improved flood management capabilities. While the statewide HR&L program might reduce water supply availability to water users in other parts of the state, Yuba Accord water transfers under the Proposed Projects and Yuba Water's HR&L program would contribute positively towards water supply reliably for water users outside of the Yuba River watershed.

The Yuba Accord Extension would allow the YRDP and Narrows Project to continue to operate according to the Proposed Projects requirements, so there would be no change in water supply or flood management operations. Operations under Yuba Water's HR&L program are designed to be complimentary to the Yuba Accord Extension and the Proposed Projects; the three programs would continue to provide water supplies to both Yuba Water member units and downstream water users.

Flood-management-focused projects like the 500-year Flood Protection Project and levee improvements would be cumulatively beneficial for flood-protection both within the Yuba River region and along the Feather River. The Proposed Projects would not reduce the flood related benefits of any of the flood protection programs. These projects would be cumulatively beneficial to flood protection and water supply.

5.6.1.3 Proposed Projects Cumulative Condition Impact Determinations

YRDP Cumulative Impact SW-PP-1: Impacts to surface water resources

Under the cumulative condition, including the Proposed Projects, the cumulative impact to surface water resources would be less than significant for the reasons above. The Proposed YRDP Project would result in a **less than significant cumulative impact** to surface water resources.

Narrows Cumulative Impact SW-PP-1: Impacts to surface water resources

Under the cumulative condition, including the Proposed Projects, the cumulative impact to surface water resources would be less than significant for the reasons above. The Proposed Narrows Project would result in a **less than significant cumulative impact** to surface water resources.

5.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

5.6.2.1 Cumulative Impacts on Surface Water Resources Resulting from Construction Activities

Construction activities planned under Alternative 1 do not differ from those planned under the Proposed Projects. Therefore, the assessment of the Proposed Projects cumulative impacts above applies also to the cumulative impacts of construction under Alternative 1.

5.6.2.2 Cumulative Impacts on Surface Water Resources from Operations

Since Alternative 1 is very similar to the Proposed Projects, the effect of projects considered for the surface water resource cumulative impacts analysis, when combined with Alternative 1, would be similar as when combined with the Proposed Projects. Accordingly, the assessment of effects of other projects considered in the surface water resources cumulative analysis with Alternative 1 operations would be consistent with the discussion under the Proposed Projects cumulative analysis above.

5.6.2.3 Alternative 1 Cumulative Condition Impact Determinations

YRDP Cumulative Impact SW-Alt1-1: Impacts to surface water resources

Under the cumulative condition, including Alternative 1, the cumulative impact to surface water resources would be less than significant. The YRDP Alternative 1would result in a **less than significant cumulative impact** to surface water resources.

Narrows Cumulative Impact SW-Alt1-1: Impacts to surface water resources

Under the cumulative condition, including Alternative 1, the cumulative impact to surface water resources would be less than significant. The Narrows Project Alternative 1 would result in a **less than significant cumulative impact** to surface water resources.

5.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

5.6.3.1 Cumulative Impacts on Surface Water Resources Resulting from Construction Activities

Construction activities planned under Alternative 2 do not differ from those planned for the YRDP Relicensing Project under the Proposed Projects scenario. Therefore, the assessment of the Proposed Projects cumulative impacts above applies also to the cumulative impacts of construction under Alternative 2.

5.6.3.2 Cumulative Impacts on Surface Water Resources from Operations

Changes in operations of the YRDP under the Cumulative Condition (Alternative 2) scenario relative to the Existing Condition scenario are essentially equivalent to those described for the Alternative 2 scenario vs Existing Condition scenario. Accordingly, implementation of changes in flow requirements in YRDP reaches and in reaches upstream of the YRDP are reflected in the previously discussed Alternative 2 vs Existing Condition comparison.

Since Alternative 2 represents an alternative to the HR&L program, they would not both be implemented. But other projects considered under Cumulative Conditions for surface water resources could still be implemented.

If Alternative 2 were implemented for the Yuba River, it is likely it would be similarly implemented on other tributaries throughout the state. The combination of Alternative 2 with similar operations on other tributaries would likely result in widespread reductions in water supply to water users throughout the state, increasing the potential impact on water supply.

Alternative 2 would result in potentially significant impacts on water supply deliveries to Yuba Water member units and on Yuba Accord water transfers. Those same impacts would be expected to remain under Cumulative Conditions (Alternative 2). Yuba Water would cease water transfer operations under Alternative 2, and it is likely other water transferors would similarly elect not to transfer water if conditions similar to Alternative 2 were implemented in their watersheds. Thus, the combination of Alternative 2 with similar operations on other tributaries would likely result in substantial reductions in water transfers throughout California, potentially increasing the potential impacts.

As described in Section 5.5.6 and 5.5.7, the Narrows Project has a relatively small role in managing flows, and its operations would not vary substantially from those under Existing Condition, or otherwise in lieu of Alternative 2.

5.6.3.3 Alternative 2 Cumulative Condition Impact Determinations

YRDP Cumulative Impact SW-Alt2-1: Impacts to surface water resources

Under the cumulative condition, including Alternative 2, the cumulative impact to surface water resources would be significant. The YRDP Alternative 2's incremental contribution to the cumulative impact to surface water resources would be cumulatively considerable. There is no potential mitigation for the potential cumulative impacts, the YRDP Alternative 2 would result in **a significant and unavoidable cumulative impact** to surface water resources.

Narrows Cumulative Impact SW-Alt2-1: Impacts to surface water resources

Under the cumulative condition, including Alternative 2, the Narrows Project Alternative 2's incremental contribution to the cumulative impact of Surface Water Resources would not be cumulatively considerable. The Narrows Project Alternative 2 would result a **less than significant cumulative impact** to surface water resources.

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CHAPTER 6

GROUNDWATER RESOURCES

6.1 Introduction

This section describes the groundwater conditions in the North Yuba and South Yuba Subbasins of the Sacramento Valley Groundwater Basin (Yuba Subbasins), identifies the regulatory context and policies related to groundwater resources, and evaluates potential direct, indirect, and cumulative groundwater impacts of the Proposed Projects and alternatives.

6.2 Environmental Setting

The information provided below reflects the current environmental setting and affected environment in the Yuba Subbasins that may be influenced by implementation of the Proposed Projects. This discussion is limited to the Yuba Subbasins as this area is potentially impacted by changes in surface water availability for diversion for agricultural use due to Proposed Projects-related changes in Yuba River streamflow. Reduction in surface water diversions often results in increases in groundwater pumping, which can create impacts. Groundwater resources in other areas along the Yuba River are not impacted as there are no major surface water diversions that could be impacted by changes in Yuba River streamflow.

6.2.1 Yuba Subbasins

This section describes the boundaries of the Yuba Subbasins for groundwater resources and the environmental setting/affected environment. More detailed information on the environmental setting can be found in the Yuba Subbasins Groundwater Sustainability Plan (GSP) (YCWA 2024a) as well as Hydrogeologic Understanding of the Yuba Basin (Hydrogeologic Understanding Report [HUR]) (YCWA 2008) and Groundwater Management Plan (YCWA 2010).

The Yuba Subbasins are the groundwater subbasins underlying part of Yuba County. The main surface water features are the Yuba, Feather, and Bear Rivers. The Yuba River runs through the Yuba Subbasins, dividing the groundwater system underlying western Yuba County into the North Yuba and South Yuba Subbasins. The GSP defines these two subbasins as follows (YCWA 2024a):

> *North Yuba Subbasin (Basin Number 5-021.60) encompasses approximately 94 square miles (60,323 acres) in the eastern central portion of the Sacramento Valley Groundwater Basin. It is bounded on the west by the Yuba-Sutter County line, on the south by the Yuba River, on the east by the Sierra Nevada foothills, and on the north by the boundary between Butte-Yuba County line, except where Ramirez Water District's northern boundary is located north of the Butte-Yuba County line, in which case the northern boundary of Ramirez Water District is the subbasin's northern boundary.*
>
> *South Yuba Subbasin (Basin Number 5-021.61) encompasses approximately 170 square miles (108,886 acres) directly south of the North Yuba Subbasin. It is bounded on the west*

by the Yuba-Sutter County line, on the north by the Yuba River, on the east by the Sierra Nevada foothills, and on the south by the boundary between Yuba County and both Sutter County and Placer County, except where Dry Creek Mutual Water Company's southern boundary is located south of the Sutter-Yuba County line, in which case the southern boundary of Dry Creek Mutual Water Company is the subbasin's southern boundary.

The Yuba Subbasins form a portion of the larger Sacramento Valley Groundwater Basin (Sacramento Basin). However, the two subbasins are partially hydraulically separated from the rest of the Sacramento Basin by the Feather River, the Bear River, and Honcut Creek. The North Yuba and South Yuba Subbasins are believed to not be hydraulically isolated from each other by the Yuba River except near the surface. Since the underlying geology of the two subbasins is similar, the description of the geologic setting below treats the North Yuba Subbasin and South Yuba Subbasin as if they were one larger subbasin.

For many years, groundwater has been an important source of water supply to Yuba Water Member Units and other local water purveyors. The Member Units are Brophy Water District (BWD), Browns Valley Irrigation District (BVID), Cordua Irrigation District (CID), Dry Creek Mutual Water Company (DCMWC), Hallwood Irrigation Company (HIC), Ramirez Water District (RWD), South Yuba Water District (SYWD), and Wheatland Water District (WWD). The boundaries of the eight Member Units are depicted in Figure 6.2-1. There are five local water purveyors: California Water Service (serving the City of Marysville), Olivehurst Public Utility District (OPUD), Linda County Water District, City of Wheatland, and Beale Air Force Base (AFB) Figure 6.2-1.

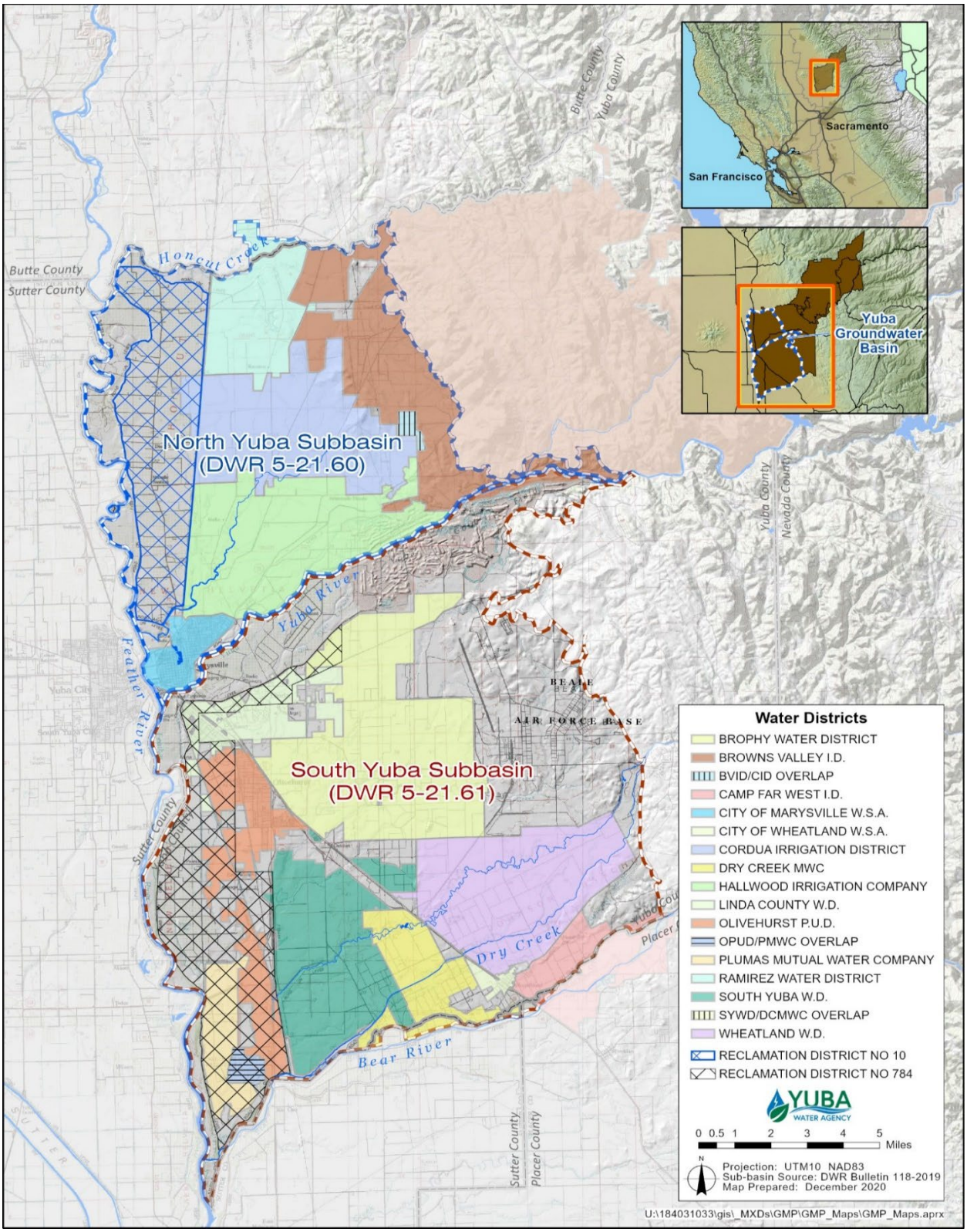

Figure 6.2-1. North Yuba and South Yuba Groundwater Subbasins and Local Water Purveyors.
Source: YCWA 2024a.

6.2.2 Hydrogeology of the Yuba Subbasins

This section presents a brief overview on geology and hydrology of the Yuba Subbasins, which lie at the base of the Sierra Nevada Foothills and form a portion of the Sacramento Valley Groundwater Basin. Sources used to describe the geology of the Yuba Subbasins are the Yuba Subbasins GSP (YCWA 2024a); Hydrogeologic Understanding of the Yuba Basin (YCWA 2008); DWR's Bulletin 118 (1978 and 2003 Update) (DWR 2003); the California Department of Conservation, Division of Mines and Geology, Chico Quadrangle Topology Map (Saucedo and Wagner 1992); and several US Geological Survey publications (Harwood and Helley 1987; Olmstead and Davis 1961; and Page 1974, 1980, and 1986). For more detailed information, please refer to these documents. The geologic and hydrogeologic setting in the Yuba Subbasins ranges from young alluvial deposits that store and transmit groundwater to underlying continental formations that do not store or yield a significant amount of groundwater.

6.2.2.1 Primary Groundwater-Bearing Formations

Primary water-bearing formations include surface basin deposits and the Older Alluvium (Modesto/Riverbank), Laguna, and Mehrten formations, which comprise the majority of the Yuba Subbasin alluvial aquifer system.

6.2.2.1.1 Surface Basin Deposits

Surface deposits occur at or near the ground surface and are composed of stream channel and floodplain deposits, and dredger tailings, along the present-day stream channels of the Yuba, Bear, and Feather Rivers and Honcut Creek, and within the incised channels of the smaller drainages. Surface geology for the Yuba Subbasins consists mainly of alluvial valley sediments that gradually increase in thickness toward the west. The recent alluvial deposits are mainly highly permeable, coarse-grained gravels containing boulders and rounded cobbles as well as sands, and can be up to 110 feet thick. The high permeability of these stream channel deposits allows them to act as a large recharge area. Reported well yields within these deposits are from 2,000 to 4,000 gallons per minute (gpm) (DWR 2003).

The dredger tailings extend downstream from the Sierra Nevada Foothills along the Yuba River for 15 miles and are large piles of very coarse gravels and cobbles. These piles have been dredged for gold and range in thickness between 60 feet to 80 feet in the eastern area, and 100 feet to 125 feet in the west (DWR 2003). These materials are highly permeable.

6.2.2.1.2 Modesto/Riverbank Formations

The older floodplain deposits of the Modesto Formation lie above the recent alluvium and create a 1- to 2-mile-wide band of terraces on both sides of the Feather River. The Modesto Formation and the older Riverbank Formation also form terraces along the banks of the smaller drainages, including Reeds Creek, Dry Creek, and Jack Slough, which are filled with recent alluvium (Saucedo and Wagner 1992).

6.2.2.1.3 Laguna Formation

Compared to the other formations located in the Yuba Subbasins, the Laguna Formation is the thickest and most extensive water-bearing formation (YCWA 2008). This formation is exposed

along the eastern boundary. It is also exposed in isolated hills between Beale AFB and WWD, where thin, surrounding younger sediments allow the Laguna Formation to be exposed in "windows." Farther west, the formation is found only in deep wells. This formation consists of a heterogeneous mix of generally poorly sorted clay, silt, sand, and gravel. Specifically, in the Sacramento Valley, the Laguna Formation contains abundant beds of somewhat clayey silt to silty fine sand, some well-sorted sand in relatively thin zones, and scarce, poorly sorted gravel beds (Page 1986).

6.2.2.1.4 Mehrten Formation

The Mehrten Formation is an important source of fresh groundwater in the Central Valley. This sequence of volcanic rocks was deposited in the late Miocene through Pliocene ages. In the Sacramento Valley, the formation consists of two general units: (1) an overlying unit composed of unconsolidated black sands interbedded with blue-to-brown clay and (2) an underlying unit of hard, very dense tuff-breccia. The black sands are well-sorted, commonly found in beds of about 6 feet to as much as 20 feet thick and yield good volumes of water. The tuff-breccias yield little water, although large yields have been obtained beneath the unit from partially confined systems (DWR 1978).

The Mehrten Formation ranges from 190 feet to 500 feet thick (Page 1986; Helley and Harwood 1985). Surficial exposures of this unit are limited to a few square miles in the northeast corner of the Yuba Subbasins, dipping to the west and extending to great depths (Saucedo and Wagner 1992). Generally, the Mehrten Formation yields large quantities of water to wells, although hydraulic conductivity in the Mehrten (the ease with which water moves through pore spaces) varies from place to place (Page 1986).

These groundwater-bearing formations are underlain by geologic deposits and formations that do not store or produce groundwater. Those include Eocene and Cretaceous Rocks and Sierra Nevada Basement Rocks.

6.2.2.2 Groundwater Flow Conditions, Recharge, and Discharge

Groundwater occurs within unconfined, semi-confined, or confined conditions throughout the Yuba Subbasins. Well drillers' reports for deeper wells show changes in groundwater levels with depth, suggesting that groundwater is possibly confined or semi-confined by overlying clay layers. The degree of confinement appears to increase with depth based on drillers' logs and water level data. Aquifer tests suggest semi-confined or confined conditions at depths exceeding approximately 100 feet (Woodard & Curran 2022). Figure 6.2-2 shows a recent interpretation of groundwater elevations in the Yuba Subbasins based on groundwater elevation data collected by Yuba Water and DWR in March 2023, representing spring or seasonal high conditions (YCWA 2024b). Based on the interpreted spring 2023 groundwater elevation conditions shown, the general flow of groundwater in the Yuba Subbasin is in a southwesterly direction from the Sierra Nevada foothills in the east, either flowing into the Sutter Subbasin to the west, discharging to the Feather River, or flowing toward small pumping depressions near Highway 70, with a groundwater surface that is a subdued representation of topography. Like the topography, the hydraulic gradient is relatively steeper in eastern portions of the Yuba Subbasins and gradually flattens toward the west.

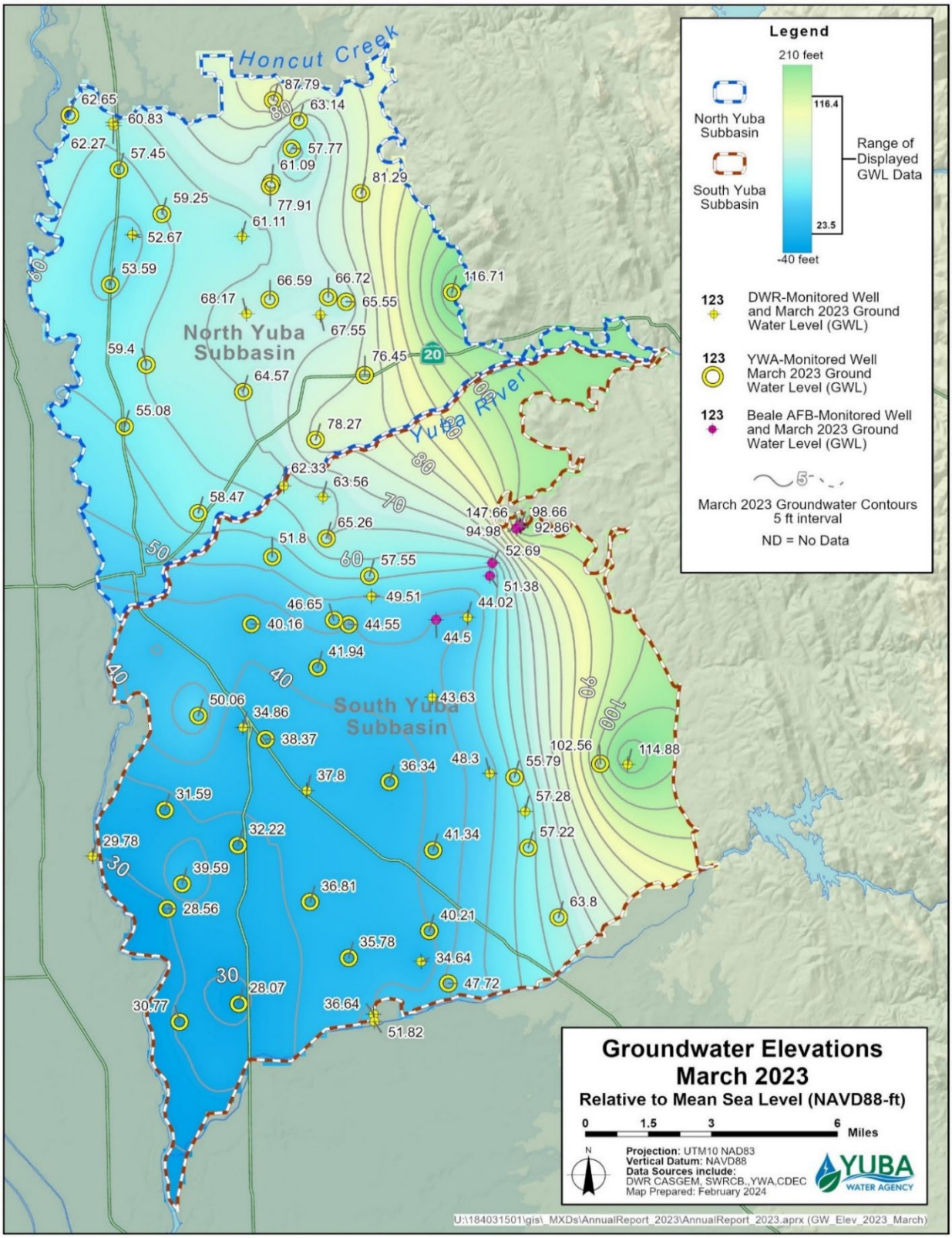

Figure 6.2-2. Spring 2023 Groundwater Elevations in the North and South Yuba Subbasins.
Source: YCWA 2024b.

As a result of hydraulic mining between 1852 and 1884, the Yuba River was filled with more debris than all the other tributaries of the Sacramento River combined. The 684 million cubic yards of gold-bearing material that washed into the Yuba River represent more than triple the volume of earth excavated during the construction of the Panama Canal (Bezerra and West 2005). Efforts to manage the debris included the 1899 Project, which included, among other components, the storage of mining debris in the Yuba River and the construction of training walls to confine the river channel within well-defined limits (USACE 1981).

The Yuba Goldfields, an area within the Yuba Subbasins known for historical gold dredging operations, is a location of substantial groundwater recharge in the Yuba Subbasins (Figure 6.2-3). This recharge is attributed to several mechanisms, including the following:

- large piles of coarse gravels and cobbles with high transmissivity and capacity for storage in the present Yuba River channel and Yuba Goldfields;
- the deep original river channel in the metavolcanic bedrock and groundwater flow occurrence between the bedrock and coarse gravel lenses; and
- the occurrence of high winter flow in the Yuba River, recharging groundwater in the Yuba Goldfields.

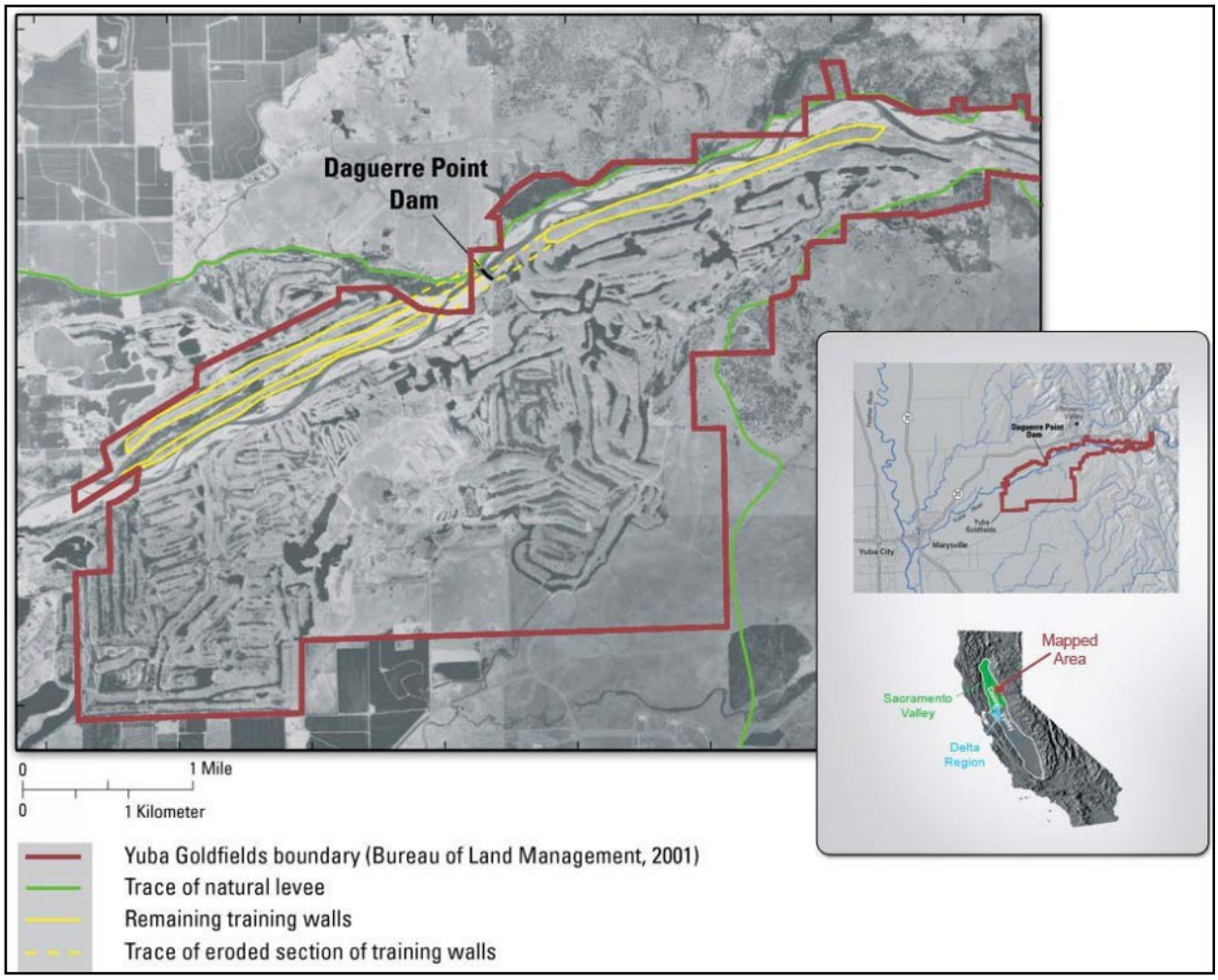

Figure 6.2-3. Location of Yuba Goldfields.
Source: YCWA 2024a

6.2.2.3 Groundwater Storage Conditions

The total volume of freshwater within the Yuba Subbasins is estimated to be 5 million acre-feet, extending to depths between 200 to 900 feet below ground surface (YCWA 2024a).

The estimated volume of freshwater in the Yuba Subbasins should be interpreted cautiously because the volume does not represent the usable amount of groundwater. The usable volume of groundwater in the Yuba Subbasins is generally assumed to extend to 200 feet below ground surface, even though some wells extend to much greater depth. Groundwater levels within the basin are managed within a safe range well within the upper extents of usable groundwater to avoid negative impacts such as dewatering existing production wells, significantly increasing operational cost of groundwater extraction, and significantly decreasing groundwater quality or quantity.

Groundwater level and storage conditions are managed through the Yuba Subbasins GSP's sustainable management criteria for groundwater levels. The sustainable management criteria include minimum thresholds for 31 representative monitoring wells in the Yuba Subbasins. Exceedance of the minimum threshold at more than 25 percent of the representative monitoring

wells for two consecutive years is considered an undesirable result. Yuba Water, as the implementing GSA, must avoid undesirable results. 26 of the 31 representative monitoring wells have minimum thresholds of 75 feet below ground surface. The remaining 5 representative monitoring wells have minimum thresholds of between 84 and 132 feet below ground surface. Since adoption of the Yuba Subbasins GSP in January 2020, no minimum thresholds have been exceeded at any of the representative monitoring wells.

Additionally, the GSP includes a threshold at the same or higher elevation than the minimum thresholds, termed local management levels. The local management level represents the lowest groundwater levels that are locally desired. Distinct from the minimum threshold, these non-regulatory levels may be higher than levels that would constitute "significant and unreasonable results" under SGMA (i.e., the regulatory "floor" established under SGMA). These local management levels guide adaptive management in the Yuba Subbasins and provide a level of protection to help avoid undesirable results.

Additional information on the GSP is provided in Section 6.3.1.1.

6.2.2.4 Local Groundwater Usage

Use of groundwater for irrigation in the Yuba Subbasins had been generally stable for decades, while the smaller municipal groundwater use has developed gradually as the need for water has increased with modest urban growth. Currently, Yuba Water has water service agreements to deliver surface water to its Member Units from the lower Yuba River as part of the YRDP. Yuba Water provides water to its Member Units representing 79,950 gross acres (YCWA 2021). Landowners within the Member Units have existing capacity to pump groundwater to meet a portion of their demands. More than 200 production wells are located within the Member Units' service areas. Five municipal purveyors located within the Yuba Subbasins (California Water Service [serving the City of Marysville], OPUD, Linda County Water District, City of Wheatland, and Beale AFB) rely on groundwater to meet all of their municipal and industrial water demands. Currently, approximately 33 production wells are operated by these municipal purveyors. Groundwater also supplies all private potable users within the Yuba Subbasins. Other water purveyors in Yuba County outside of the Yuba Subbasins use combinations of groundwater and surface water supplies to meet their demands.

Figure 6.2-4 and Figure 6.2-5 show groundwater production from Water Year (WY) 1991 to 2023 together with the annual and cumulative change in storage from WY 1961 to 2023 (YCWA 2024b). In WY 2023 (October 2022 to September 2023), the North Yuba Subbasin saw an increase of groundwater in storage of approximately 23,000 acre-feet (AF) and the South Yuba Subbasin saw an increase of groundwater in storage of approximately 57,000 AF. These increases are largely due to the wet conditions in WY 2023, which followed drier years; the reduced groundwater use and increased recharge during WY 2023, compared to earlier years, resulted in the increase in groundwater in storage. Cumulative change in storage since WY 1961 was approximately -1,000 AF and +182,000 AF by WY 2023 in the North Yuba and South Yuba Subbasins, respectively. Between WY 1991 and 2023, groundwater production in the North Yuba Subbasin ranged from 37,831 AF in WY 2012 to 90,458 AF in WY 2001. During the same time period, groundwater production in the South Yuba Subbasin ranged from 71,139 AF in WY 2023 to 159,044 AF in WY

1991. This represents long-term stable conditions in the North Yuba Subbasin and long-term improvement in conditions in the South Yuba Subbasin.

Historically, irrigation demands in most of the North Yuba Subbasin have been sufficiently supplied by diversions from the Yuba River. An exception is RWD, which relied substantially on groundwater until surface water deliveries began in 1978. In addition to the surface water received from Yuba Water under its water rights, HIC, CID, and BVID also divert water supplies under their own water rights on the lower Yuba River. Farmers in Reclamation District 10, in the western portion of the North Yuba Subbasin, use groundwater as their primary source of water for irrigation.

In the South Yuba Subbasin, surface water supplies were historically limited. Agricultural and urban water users in this area relied heavily on groundwater supply until 1983 when Yuba Water began to provide Yuba River water, through the Yuba Main Canal, to BWD and SYWD. In 1998, DCMWC started receiving surface water from Yuba Water. In 2010, following completion of the Yuba Wheatland Canal Project, Yuba Water began delivering surface water to WWD, which allowed WWD to reduce its groundwater pumping, thereby providing in lieu recharge of the Subbasin. Plumas MWC diverts water from the Feather River under a settlement agreement with DWR. BWD, SYWD, DCMWC, and WWD currently receive surface water from the Yuba River, while areas not served by agricultural water purveyors rely fully on groundwater.

Figure 6.2-6 and Figure 6.2-7 show historical groundwater elevation data (hydrographs) for the North Yuba and South Yuba Subbasins, respectively. Figure 6.2-6, for the North Yuba Subbasin, shows that, in general, groundwater levels in this subbasin were not drawn down extensively because of the historical surface water supply to the Member Units in this area. Figure 6.2-7 suggests that, prior to the delivery of surface water to the Member Units, groundwater pumping resulted in declining groundwater levels throughout the South Yuba Subbasin, and in some areas, groundwater depressions were evident. Since the delivery of surface water to the Member Units began in 1983, groundwater elevations have risen to historical high levels in some areas and have exceeded historical high levels in other areas. Surface water deliveries have a significant effect on groundwater levels. Since the early 1980s, groundwater levels have increased by approximately 100 feet in some areas.

Groundwater pumping capacity through private groundwater wells exists within the Member Units primarily as a result of historical needs for groundwater supplies prior to current levels of surface water deliveries and, to a lesser degree, to support groundwater substitution transfers. The groundwater pumping capacity within the Member Units was estimated as 120,000 AF in 2007 (YCWA 2007). Since that time, WWD began receiving surface water deliveries. The pumping capacity within WWD can be estimated by its highest annual pumping during subsequent groundwater substitution transfers: 11,500 AF in 2009. Thus, the combined pumping capacity within the current Member Units is an estimated 131,500 acre-feet per year (AFY).

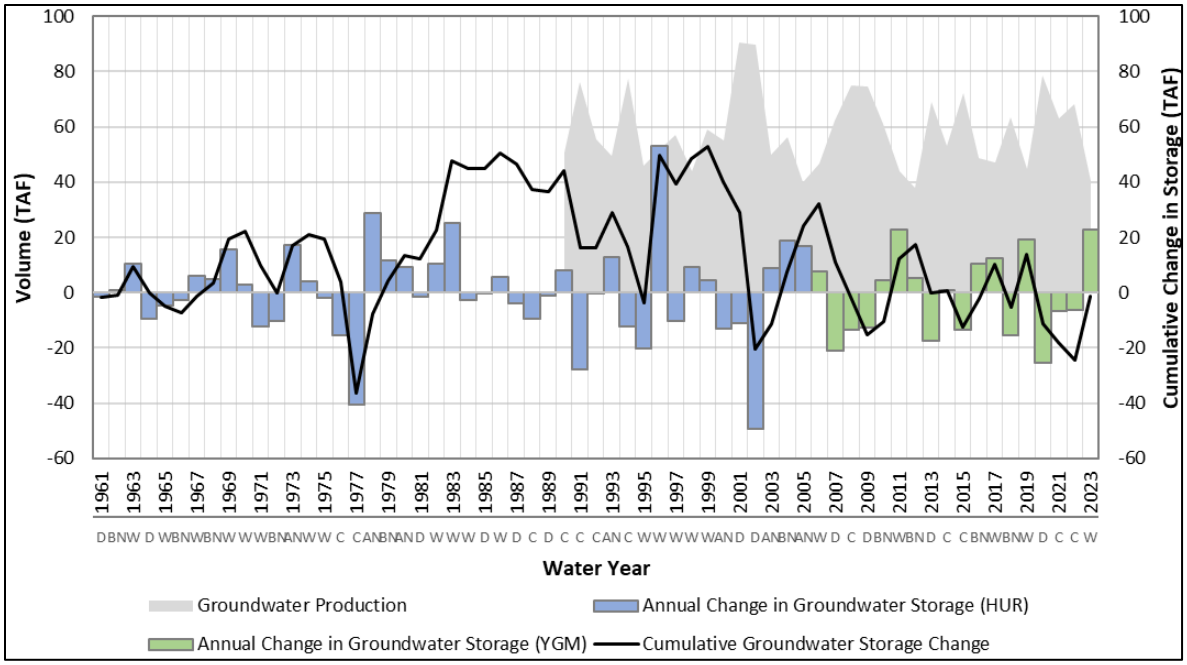

Figure 6.2-4. Estimated Groundwater Storage, Change in Storage, and Groundwater Production in the North Yuba Subbasin.

* Sacramento River Water Year Index Water Types: W = Wet, AN = Above Normal, BN = Below Normal, D = Dry, and C = Critical
Groundwater production data not available for periods where not shown

Source: YCWA 2024b.

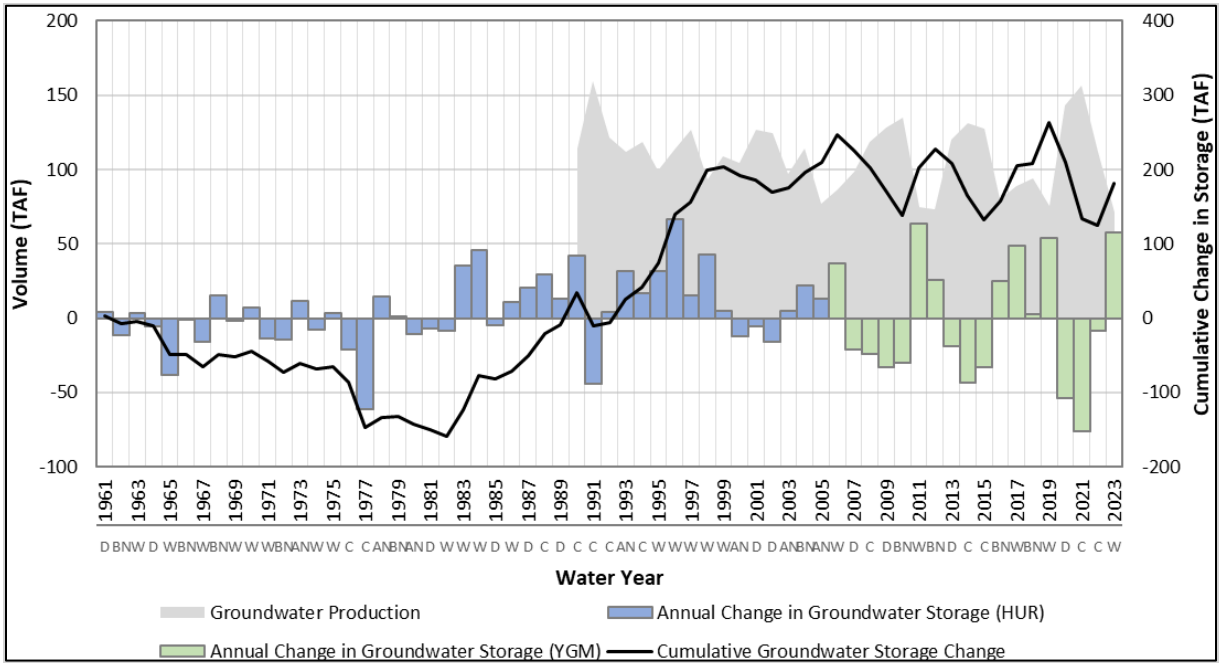

Figure 6.2-5. Estimated Groundwater Storage, Change in Storage, and Groundwater Production in the South Yuba Subbasin.

* Sacramento River Water Year Index Water Types: W = Wet, AN = Above Normal, BN = Below Normal, D = Dry, and C = Critical
Groundwater production data not available for periods where not shown

Source: YCWA 2024b.

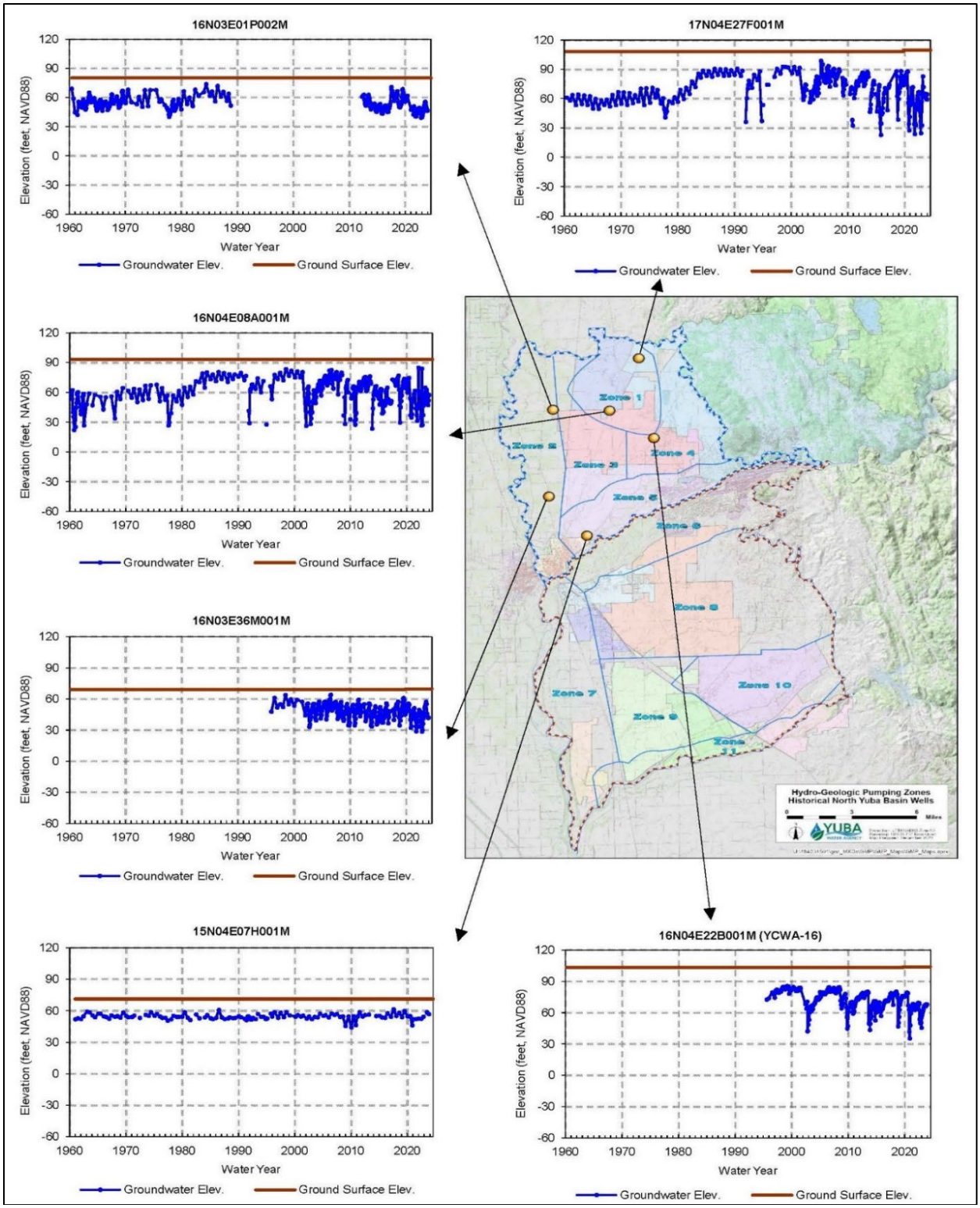

Figure 6.2-6. Historical Groundwater Elevations for Selected Monitoring Wells in the North Yuba Subbasin.

Source: YCWA 2024b.

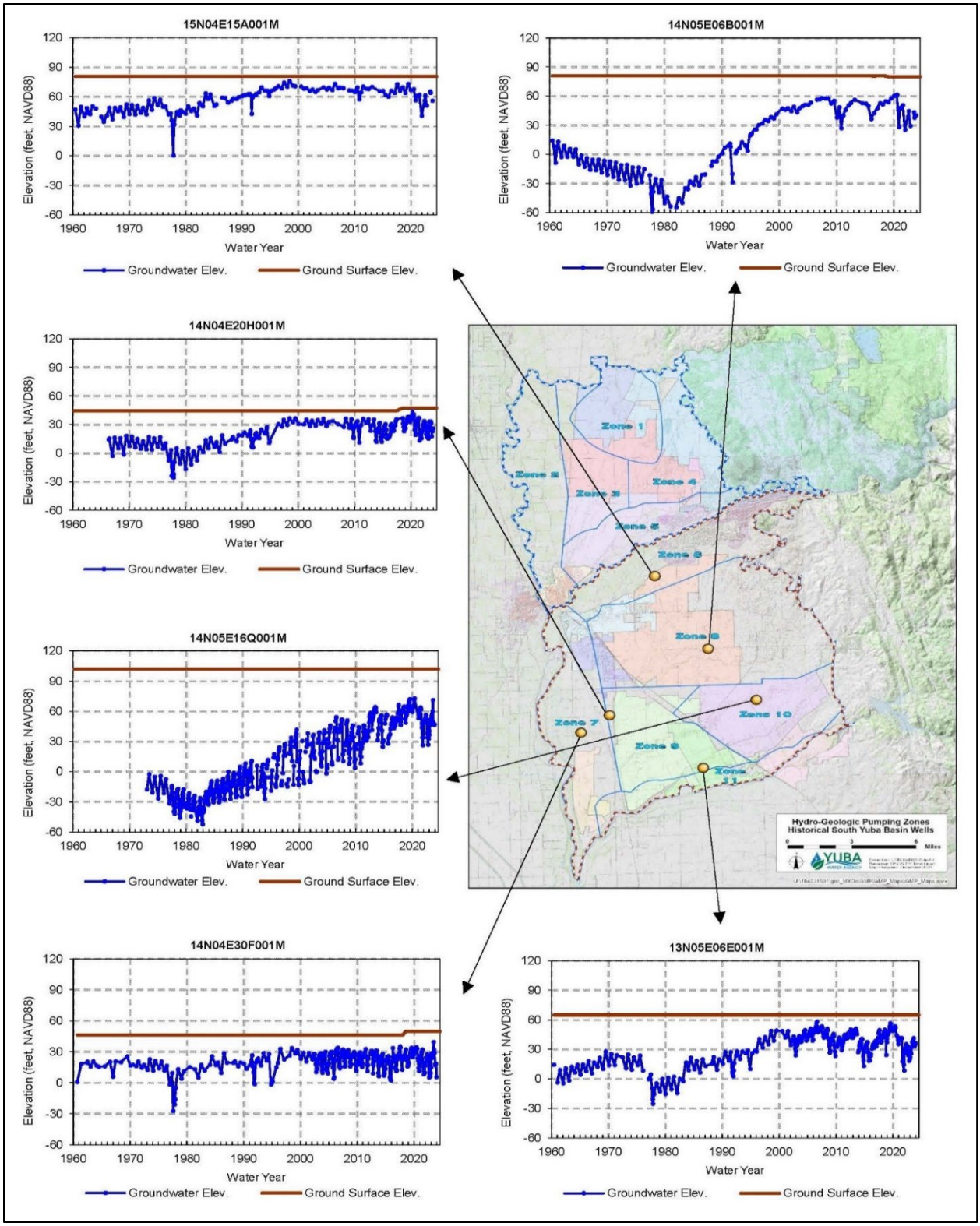

Figure 6.2-7. Historical Groundwater Elevations for Select Monitoring Wells in the South Yuba Subbasin.
Source: YCWA 2024b.

6.2.3 Hydrogeology East of the Yuba Subbasins

Groundwater in the eastern portion of the county, east of the alluvial Yuba Subbasins, occurs in fractured bedrock. Unlike alluvial aquifers, in fractured bedrock, groundwater is stored or transmitted only through the fractures. The quantity of storage or flow depends on the size and location of fractures, interconnection of fractures, and amount of material that may be clogging the fractures. Fractures make up a small percentage of rock volume, so the total storage and flow is typically small in these systems (DWR 2004). Groundwater use in this portion of the county is typically low, primarily small domestic wells, in contrast to larger agricultural and public water supply wells within the Yuba Subbasins.

6.2.4 Local Groundwater and Surface Water Interactions

The main surface water features in the Yuba Subbasins are the Yuba, Feather, and Bear Rivers. The North Yuba Subbasin is bounded on the north by a smaller surface water feature, Honcut Creek. Other surface water bodies and wetland communities, such as surface-ponding vernal pools and groundwater dependent ecosystems (GDEs), are present in the Yuba Subbasins (CDFW 2024 and YCWA 2024a, respectively), as described below.

The Yuba River, running between the North Yuba and South Yuba Subbasins, plays an important role in resource management and planning, including flood management, power generation, water quality, fisheries, and recreation. The upper reach of the portion of the Yuba River within the Yuba Subbasins, generally upstream of Daguerre Point Dam, is an important recharge zone for the Yuba Subbasins. The Feather River is a principal tributary of the Sacramento River, flowing through Butte County and between Yuba and Sutter Counties. It drains part of the northern Sierra Nevada Mountains and a small portion of the middle part of the Sacramento Valley. Honcut Creek is a major tributary to the lower Feather River, flowing between Butte and Yuba Counties. Downstream from the confluence with Honcut Creek, the lower Feather River meets with the Yuba River at Marysville. Further downstream, the lower Feather River meets with the Bear River along the southern boundary of the South Yuba Subbasin.

Interconnected surface waters are surface water features that are hydraulically connected by a continuous saturated zone to the underlying aquifer. In other words, interconnected surface waters exist where groundwater table elevations and surface water features intersect at the same elevations and locations. Within the Yuba Subbasins, all surface water systems are thought to be interconnected with at least shallow groundwater (YCWA 2024a). Interconnected surface waters are classified as either gaining or losing, meaning the surface water feature is either gaining water from groundwater or losing water into groundwater, with that relationship potentially variable over time.

The interaction between groundwater and surface water within the Yuba Subbasins is analyzed through use of the Yuba Groundwater Model (YGM) (YCWA 2019) as documented in Appendix 6A. As in most of California, the direct measurement of the gain or loss to groundwater from surface water bodies is not feasible in the Yuba Subbasins. The YGM provides information to characterize the interconnected surface water system. Each stream node in the YGM is characterized by model output as either gaining, losing, or mixed, as shown in Figure 6.2-8 (YCWA 2024a).

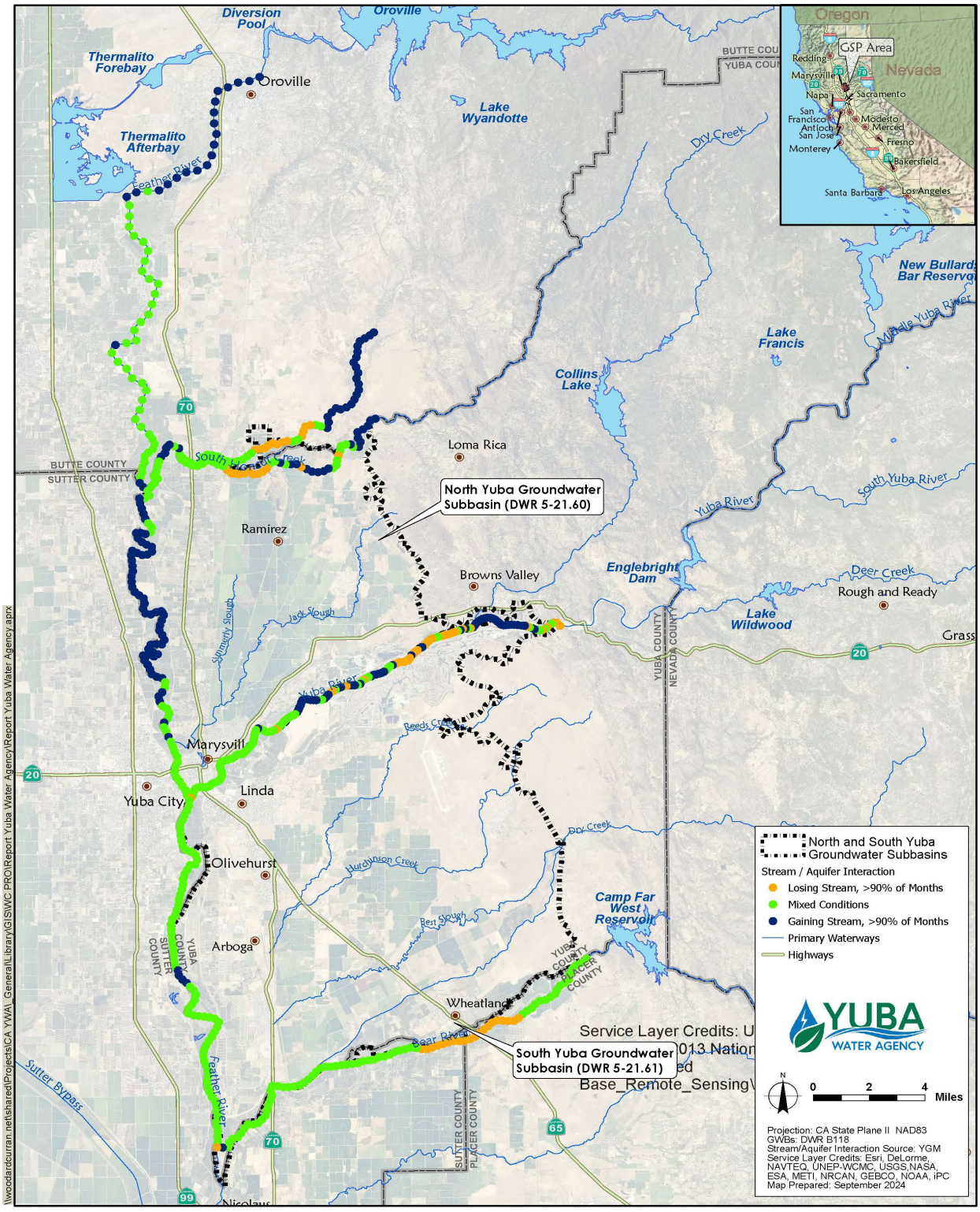

Figure 6.2-8. Gaining and Losing Portions of Major Rivers, Based on YGM Output.
Source: YCWA 2024a

The node is considered gaining if model output indicates that the reach experiences net gaining conditions during 90 percent of all modeled simulated months under historical conditions and considered losing if model output indicates net losing conditions during 90 percent of all months. All other nodes are classified as mixed. Details on inflows, losses, and gains from each major river in the Yuba Subbasins are provided below, with values presented as average annual volumes based on YGM output reported in the Yuba Subbasins GSP (YCWA 2024a).

6.2.4.1 Surface Water-Ponding Vernal Pools

In addition to the rivers, surface water-ponding vernal pools are located in the local study area. Locations of the vernal pools are available from CDFG based on California Natural Diversity Database (CNDDB). In general, the vernal pools found in the study area do not depend upon groundwater to maintain pool levels (Williamson et al. 2005) but instead are recharged by direct precipitation and surface water flows (e.g., agricultural). Groundwater pumping associated with implementation of the Proposed Projects would not affect these resources.

6.2.4.2 Groundwater Dependent Ecosystems

GDEs are defined in the GSP Emergency Regulations as "ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" (California Code of Regulations, Title 23, Section 351(m)). The identification of GDEs was performed as part of the Yuba Subbasins GSP (YCWA 2024a) using the Natural Communities Commonly Associated with Groundwater (NCCAG) database. The NCCAG database was developed by a working group composed of DWR, California Department of Fish and Wildlife, and The Nature Conservancy by reviewing publicly available state and federal agency datasets that mapped California vegetation, wetlands, springs, and seeps and by conducting a screening process to retain types and locations commonly associated with groundwater. The results were compiled into the NCCAG database with two habitat classes defined. The first class includes wetland features commonly associated with the surface expression of groundwater under natural, unmodified conditions. The second class includes vegetation types commonly associated with the surface presence of groundwater (i.e., phreatophytes). Steps taken to identify GDEs based on the NCCAG dataset are detailed in the Yuba Subbasins GSP (YCWA 2024a).

The Yuba Subbasins GSP includes an examination of GDEs and the potential impacts from groundwater pumping within the basin. The GSP concluded that groundwater pumping for all purposes would be unlikely to affect GDEs primarily because wells in the basin are generally pumping the deeper aquifer, GDEs are supported by shallow groundwater, and "deep pumping" has limited impacts on shallow groundwater conditions. The GSP determined that the shallow groundwater system is mostly driven by river stage and likely with some contributions from nearby irrigated agriculture (YCWA 2024a).

6.2.5 Local Groundwater Quality

Groundwater throughout the Yuba Subbasins has relatively consistent water quality characteristics and meets local needs for municipal, domestic, and agricultural uses (YCWA 2024a). While small drinking water systems or large public drinking water systems in Yuba County are able to meet regulatory requirements for water quality, system operators often have a plan or manage around a

few water quality issues. There is naturally occurring arsenic, iron, and manganese that may exceed the Maximum Contaminant Level or Secondary Maximum Contaminant Levels. Such concentrations may be addressed through filtration, reverse osmosis, or blending, or may not be used for potable uses. Exceedances may be caused by localized conditions and may not be reflective of regional water quality. As an alternative to treatment or blending, wells can be drilled to different depths or at different locations to avoid lower quality water. Further, like most of the Central Valley, the Yuba Subbasins are at risk of increasing salt and nutrient conditions largely due to agricultural and urban uses of water. Currently, salt and nutrient concentrations are good across the majority of the Yuba Subbasins, although shallow groundwater conditions are isolated areas may have higher concentrations.

Figure 6.2-9 presents the estimated base of freshwater in the Yuba Subbasins, below which groundwater above is generally fresh (low salinity) and groundwater below is generally saline (YCWA 2024a). The base of freshwater surface generally follows the underlying basement structure and dips (increase in depth) to the west into the Sacramento Valley. It appears to be above Eocene marine strata and is currently within Pliocene to Miocene continental deposits. This is most likely caused by high artesian pressures and upward vertical gradients in deep aquifers in the Yuba Subbasins. This suggests that migration of poor-quality water into continental sediments that previously contained freshwater has occurred over geologic time. Based on water chemistry data, the brackish water in the lower part of aquifers near the base of freshwater is classified as sodium-chloride type water. The presence of brackish water in the deeper aquifer combined with upward vertical gradients presents the potential for upward migration of brackish water into overlying freshwater aquifers, or upconing beneath areas of pumping. Prolonged groundwater extraction in these areas may result in regional groundwater quality degradation and may ultimately reduce the thickness of the freshwater aquifers in the Yuba Subbasins.

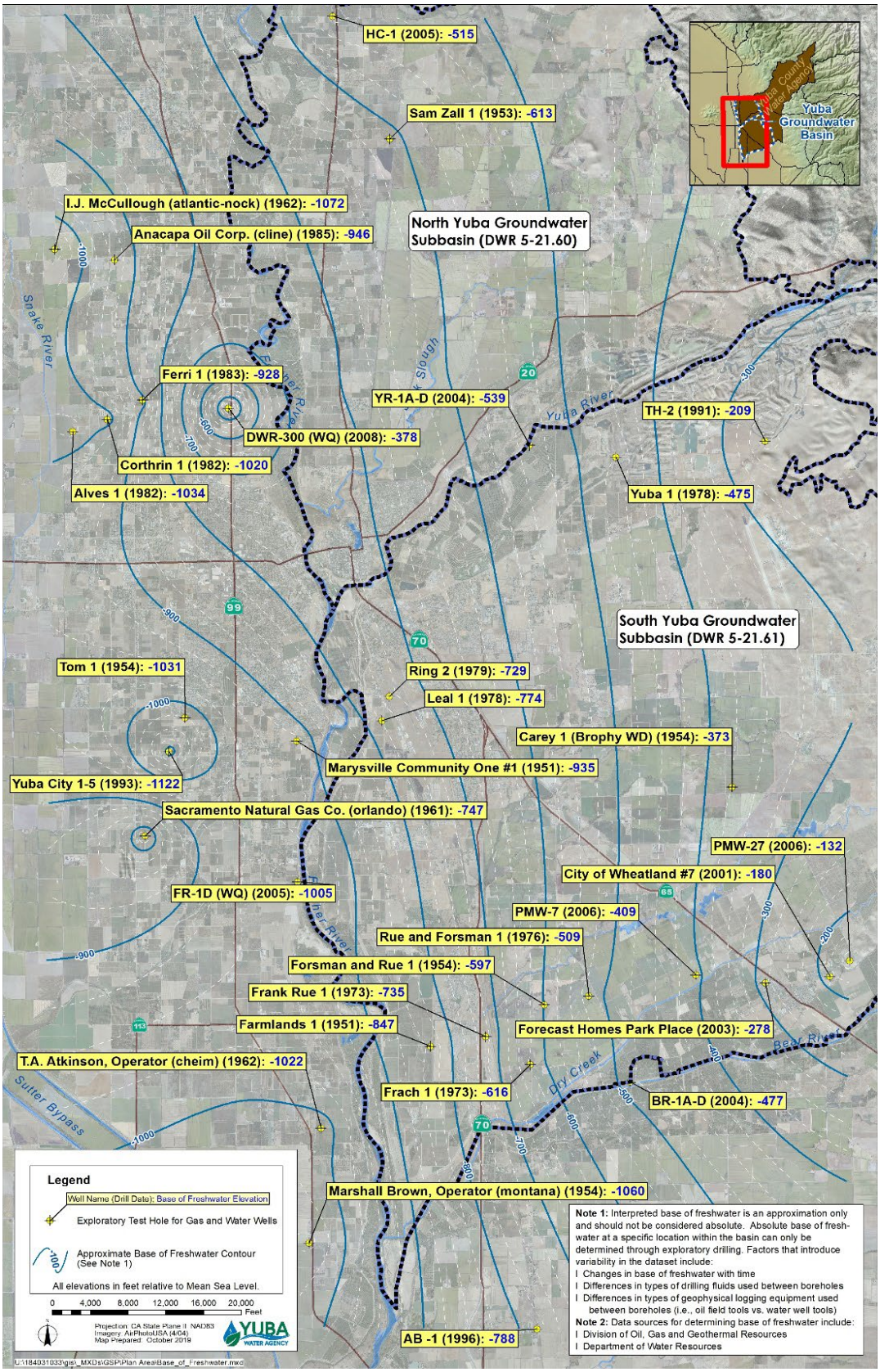

Figure 6.2-9. Base of Freshwater in Yuba Subbasins.
Source: YCWA 2024a

6.2.6 Local Land Subsidence

Land subsidence is known to occur due to groundwater extraction, causing the permanent compaction of compressible clays and decline of groundwater levels as well as differential settling of the land surface, resulting in potential infrastructure damage. To date, inelastic land subsidence has not been observed within the Yuba Subbasins and is not considered a major issue, based on historical responses to lowered groundwater levels in the South Yuba Subbasin in the 1980s (YCWA 2024a). If land subsidence were to occur in the future, levees, canals, and pipelines would become vulnerable by reducing the ability to deliver surface water by gravity and reduced ability to convey floodwater.

Yuba Water actively coordinates with DWR to monitor potential land subsidence within the Yuba Subbasins. The National Oceanic and Atmospheric Administration's National Geodetic Survey (NGS) established a subsidence monitoring network that includes 19 NGS monuments in or near Yuba County. This network was increased in size by Yuba Water to add three additional monuments in 2007. The network was intended to be monitored by DWR on a 5- year schedule (YCWA 2010) and was initially surveyed in 2007. DWR was unable to survey the monuments in 2013 due to budgetary limitations but surveyed the monuments in 2018. Results from the 2018 monitoring, shown in Figure 6.2-10, indicate little to no statistically significant land subsidence for the Yuba Subbasin, with all monitored locations in and near the subbasins having subsidence in the lowest category of less than 0.20 feet since 2008 (DWR 2018).

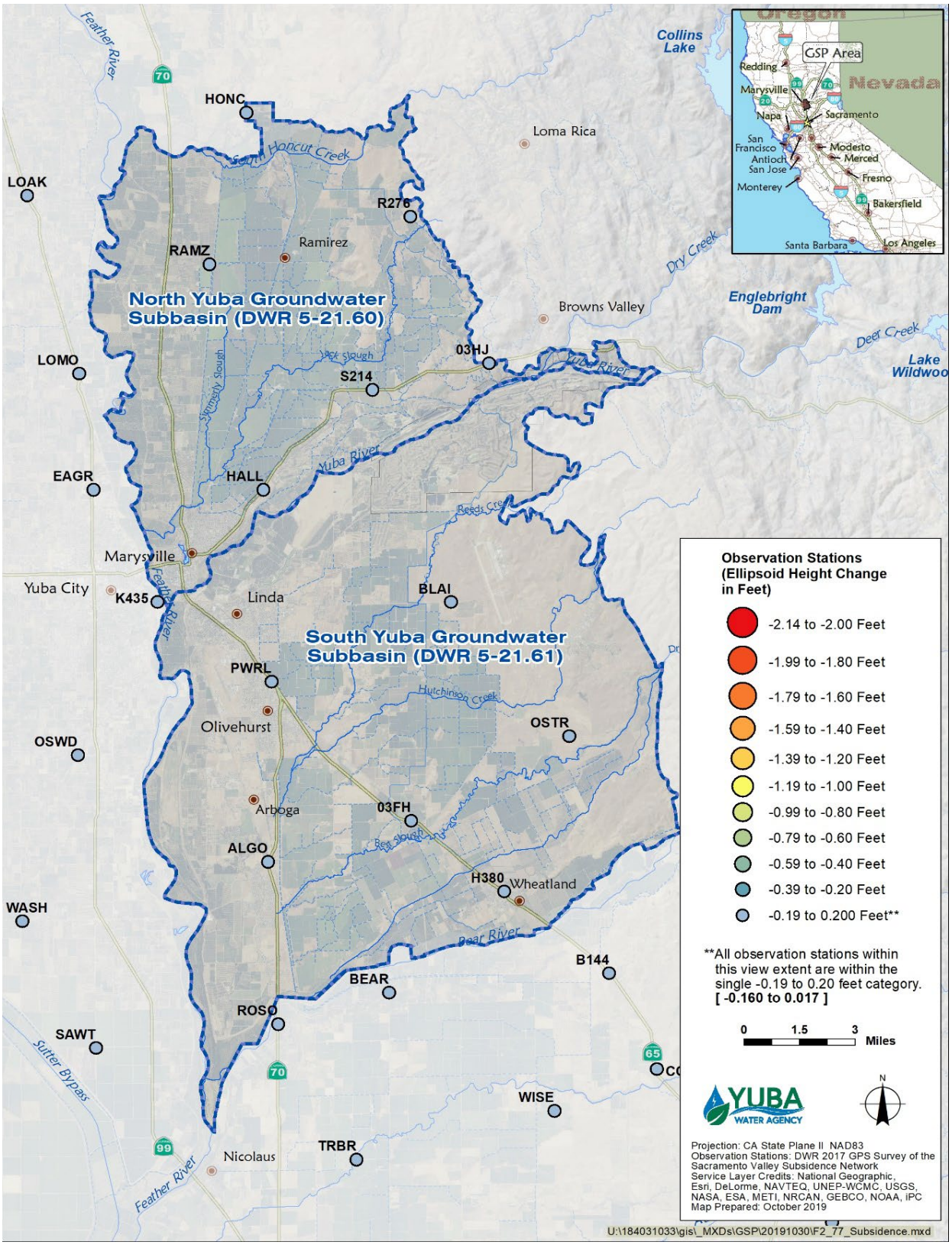

Figure 6.2-10. Subsidence within Yuba Subbasins Based on DWR Surveying.
Source: YCWA 2024a.

6.3 Regulatory Setting

6.3.1 State

6.3.1.1 Sustainable Groundwater Management Act of 2014

In 2014, in response to continued overdraft of many of California's groundwater basins, the State of California enacted the Sustainable Groundwater Management Act (SGMA), which took effect January 1, 2015. The purpose of SGMA is to help protect groundwater resources and provide local and regional agencies with the authority to manage groundwater in a sustainable manner. SGMA requires local agencies to form groundwater sustainability agencies (GSAs) for high and medium priority basins, as defined under the SGMA 2019 Basin Prioritization (DWR 2020). For such basins, SGMA requires preparation of a GSP by overlying GSAs to reach sustainability within 20 years of implementing their GSPs.

The California Department of Water Resources (DWR) has the authority to provide regulatory oversight through the evaluation and assessment of GSPs. DWR is also charged with providing on-going assistance to GSAs through development of best management practices and guidance, planning assistance, technical assistance, and financial assistance.

DWR has identified the North Yuba Subbasin as a medium-priority subbasin and the South Yuba Subbasin as a high-priority subbasin, with neither subbasin designated as critically over drafted (DWR 2020). These categorizations triggered SGMA requirements for both subbasins to develop their GSPs by January 31, 2022.

The goal of the GSPs is to establish a plan for sustainable management of the groundwater basins. SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing one or more of the following undesirable results:

1. Chronic lowering of groundwater levels, indicating a significant and unreasonable depletion of supply
2. Significant and unreasonable reduction of groundwater storage
3. Significant and unreasonable seawater intrusion
4. Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies
5. Significant and unreasonable land subsidence that substantially interferes with surface land uses
6. Depletions of surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

If the local groundwater agency's management of the basin causes or fails to correct any of these undesirable results, the State could intervene in the management of groundwater in the Subbasin (YCWA 2024a).

6.3.2 Local

6.3.2.1 Lower Yuba River Accord – Conjunctive Use Agreements

The Lower Yuba River Accord (YCWA 2007), also referred to as the Yuba Accord, comprises three important agreements: Fisheries Agreement, Water Purchase Agreement, and Conjunctive Use Agreements with each Member Unit. The Fisheries Agreement establishes variable instream flow levels to benefit wild salmon and steelhead on the Lower Yuba River. The Water Purchase Agreement creates a long-term water transfer program under which Yuba River water is transferred to other users in California. The eight Conjunctive Use Agreements establish a comprehensive groundwater program in Yuba County to improve overall water supply reliability for local farmers. The following discussion focuses on the Conjunctive Use Agreements based on their relevancy to the Proposed Projects and alternatives.

Yuba Water holds Conjunctive Use Agreements with all eight Member Units to provide long-term water supply reliability, establish a comprehensive stewardship program of surface water and groundwater supplies including improved conservation, efficiency, and conjunctive use measures; and enable conversion of diesel motors to electric motors to improve efficiency and air quality. All Conjunctive Use Agreements were executed in March 2009, with the exception of Cordua Irrigation District, which was executed in January 2021. The Agreements require the implementation of an array of conjunctive use measures and help meet local water supply needs in dry years to facilitate Yuba Water's operation of its storage facilities to meet higher instream flow requirements in the Lower Yuba River, as called for in the Fisheries Agreement, and meet the commitments of transfer water in the Water Purchase Agreement.

Contents of the Conjunctive Use Agreements include:

- Groundwater pumping in Schedule 6 years (including volumes and percent allocation to each Member Unit as well as payment), which requires operation of a groundwater substitution program up to 30,000 acre-feet to supplement storage releases
- Groundwater pumping to implement the Phase 8 Settlement Agreement (including volumes and percent allocation to each Member Unit as well as payment), which refers to the "Short-Term Agreement to Guide Implementation of "Short-Term Water management Actions to Meet Local Water Supply Needs and to Make Water Available to the SWP [State Water Project] and CVP [Central Valley Project] to Assist in Meeting the Requirements of the 1995 Water Quality Control Plan and to resolve Phase 8 Issues" (NCWA 2003)
- Payments for groundwater pumping to mitigate for deficiencies in supplemental water supplies resulting from implementation of the Fisheries Agreement and Water Purchase Agreement
- Groundwater substitution transfer program (including how determining a transfer will occur, payment provisions, and reservation of water for terms of the Fisheries Agreement)

- Conference Years (including determining supplies available and operating plan); where Yuba Water will operate the Yuba River Development Project so that (a) flows in the Yuba River comply with the instream flow requirements for Yuba Water's FERC License, except that Yuba Water will not pursue any of the flow reductions authorized by article 33(c) of that license, plus any additional instream flows agreed to by the River Management Team's Planning Group; and (b) total diversions at Daguerre point Dam do not exceed 250,000 acre-feet per year
- Provisions of the Conjunctive Use Agreement
- Groundwater pumping requirements
- Groundwater Monitoring and Reporting Program/Third-Party Impacts Plan

6.3.2.2 Yuba Water Agency Groundwater Sustainability Plan

The *Yuba Subbasins Water Management Plan: A Groundwater Sustainability Plan* (Yuba Subbasins GSP) was originally adopted by Yuba Water on January 20, 2020, and subsequently approved by the California Department of Water Resources on November 18, 2021. SGMA requires the evaluation and assessment of an approved GSP at least every five years. Yuba Water completed its first evaluation of the GSP and an amended GSP (YCWA 2024a) was adopted by Yuba Water on January 7, 2025, which is presently under review by DWR. Yuba Water Agency GSA is one of three GSAs, along with City of Marysville GSA and Cordua Irrigation District GSA, responsible for development and implementation of the GSP. The purpose of the GSP is to verify and maintain sustainable groundwater management in the North Yuba and South Yuba Subbasins (Bulletin 118 Basin Numbers 5-021.60 and 5-021.61, respectively), collectively referred to as the Yuba Subbasins, by meeting the regulatory requirements set forth in SGMA (California Water Code Sections 10720 – 10737.8). Among other things, the Yuba Subbasins GSP includes identification of the Plan area, a hydrogeologic conceptual model, a description of existing groundwater conditions, water budgets, sustainable management criteria, and identification of monitoring networks, projects, and other management actions for implementation of the GSP.

Since adoption of the original Yuba Subbasins GSP in 2020, Yuba Water Agency GSA, City of Marysville GSA, and Cordua Irrigation District GSA have worked to collaboratively implement the GSP in order to achieve the sustainability goal for the Yuba Subbasins, which is "to maintain a locally managed, economically viable, sustainable groundwater resource for existing and future beneficial use in Yuba County by continuing existing management to maintain operation within the sustainable yield or by modification of existing management to address unforeseen future conditions" (YCWA 2024a). The Yuba Subbasins GSP was approved by DWR with recommended corrective actions that have been addressed in the amended GSP, which was submitted to DWR prior to the January 31, 2025, deadline. Yuba Water continues to implement the GSP through monitoring of conditions, comparing those monitoring results with the sustainable management criteria, reporting the conditions annually to DWR, evaluating the GSP, implementing adaptive management strategies, and funding these activities. Monitoring and management under the GSP are focused on five sustainability indicators: chronic lowering of groundwater levels, reduction of groundwater storage, degraded water quality, land subsidence, and depletions of interconnected surface water.

In addition to being a sustainability indicator, groundwater levels are used as a proxy for the reduction of groundwater storage and depletion of interconnected surface water sustainability indicators (YCWA 2024a). By avoiding undesirable results related to groundwater levels, the GSP indicates that undesirable results related to the sustainability indicators of chronic lowering of groundwater levels, reduction of groundwater storage, and depletions of interconnected surface water will all be avoided. The Yuba Subbasins GSP includes a detailed description of the development of the minimum threshold water levels and how monitoring is done to assess compliance.

6.3.2.2.1 Minimum Thresholds for Chronic Lowering of Groundwater Levels

Minimum thresholds for chronic lowering of groundwater levels were selected in the GSP to represent conditions that are just above conditions that could collectively (cumulatively) generate undesirable results in the Yuba Subbasins. These minimum thresholds were developed by selecting the deeper of (1) the bottom of the shallowest domestic well near a monitoring well, adjusted for March measurements, (2) the historical low March groundwater level from 1985 to present (incorporating recent monitoring and HUR [YCWA 2008] interpolated values) at the monitoring well, or (3) 75 feet.

The minimum thresholds are based on each representative monitoring well's proximity to shallow wells and on historical groundwater levels at the representative monitoring well. Domestic wells were used for this threshold, as they are generally shallower than agricultural and municipal wells and thus considered more conservative for setting thresholds. Additionally, the loss of a domestic well usually results in a loss of water for consumption, cooking, and sanitary purposes, which can often have substantial impacts on the users of the water and can be financially difficult for the well owner to replace.

Historically low groundwater levels at each representative monitoring well were also incorporated into the analysis. Groundwater levels have fluctuated over time in the Yuba Subbasins, notably in the South Yuba Subbasin (as discussed in detail in Section 2.2.2.1 of the GSP). The GSP determined that historical conditions were not significant and unreasonable, thus this analysis considers those historical levels as being appropriate for future operations. The use of historical low groundwater levels also addresses a shortcoming in the domestic well database. The DWR Well Completion Report Map Application database that was used in development of the minimum thresholds includes domestic wells that are potentially not in use, due to age or other factors. And, like most databases, the dataset may contain errors that can be difficult to identify and rectify. Domestic wells that are shallower than the historical low groundwater level at the well would likely have run dry and either been abandoned or deepened since that time or may be due to an error in the dataset. Future installed domestic wells would be informed by the GSP and, potentially, updated county construction standards.

The minimum thresholds were developed for March groundwater level data to limit impacts of active groundwater pumping resulting in localized drawdowns that are most likely to occur in late summer or fall, which can cause erratic measurements that may not be indicative of regional conditions. A March monitoring period is thus considered a more reliable and consistent indicator of regional groundwater level conditions. To use March data, the annual change in groundwater level between the annual low groundwater level data and the average March groundwater level was identified. The depth of the shallowest domestic well was then adjusted upward (to the higher

elevation) by the average of the three largest March-to-annual-low changes to reflect March elevations that would be reasonably expected to result in groundwater levels near the bottom of the well during late summer or early fall, when groundwater levels are typically at their lowest (YCWA 2024a: Figure 4-4). This process is explained in Appendix L of the Yuba Subbasins GSP.

A minimum depth of 75 feet bgs was incorporated to represent economically accessible water that is also similar to historical lows in the South Yuba Subbasin that were reached without significant and unreasonable results. The 75- foot depth is also consistent within domestic well construction requirements in many other Central Valley counties, which incorporate minimum sanitary seal depths of up to 50 to 100 feet bgs, making the total well depths deeper than that level.

Monitoring wells used to determine changes in groundwater levels are located throughout the Yuba Subbasins (YCWA 2024a: Table 4-1). The Yuba Subbasins GSP identifies the minimum threshold elevations for each representative monitoring well in the Yuba Subbasins (YCWA 2024a: Figure 4-6). The Yuba Subbasins GSP also includes hydrographs for each representative monitoring well, including the ground surface elevation, historical groundwater levels, minimum threshold, interim milestones, and measurable objectives developed in the GSP for each representative monitoring well in the Yuba Subbasins (YCWA 2024a). All GSP annual reports (Water Years 2020, 2021, 2022, and 2023) show all representative monitoring wells with groundwater levels above minimum thresholds. The time period covered by the annual reports included periods of drought, with shortages for agricultural surface water deliveries and groundwater substitution transfers.

The GSP defines undesirable results as exceedance of the minimum threshold at more than 25 percent of representative monitoring wells for two consecutive years at each location based on the March measurement, reflective of the long-term regional approach to sustainability in the GSP.

6.3.2.2.2 Additional Criteria for Chronic Lowering of Groundwater Levels

To capture the full range of desired groundwater conditions within the Yuba Subbasins specific to the groundwater levels sustainability indicator, two additional non-regulatory levels were developed:

- Historically full aquifer level: The historically full aquifer level is a non-regulatory value that indicates historically high groundwater levels, representing the typical upper bound of groundwater levels during conjunctive water management operations.
- Local management level: The local management level represents the lowest groundwater levels that are locally desired. Distinct from the minimum threshold, these non-regulatory levels may be higher than levels that would constitute "significant and unreasonable results" under SGMA (i.e., the regulatory "floor" established under SGMA). These local management levels guide adaptive management in the Yuba Subbasins and provide a level of protection to help avoid undesirable results.

The quantitative nature of these criteria allows the GSP to demonstrate sustainability.

Sustainable Yield Estimate for the Yuba Subbasins

Under the Yuba Subbasins GSP, sustainable yield was defined as the amount of groundwater that can be withdrawn on a long-term average basis without causing undesirable results (YCWA

2024a). Based on the methodology described in the Yuba Subbasins GSP, sustainable yield is estimated as 239,000 AFY, split as 93,000 AFY in the North Yuba Subbasin and 146,000 AFY in the South Yuba Subbasin (YCWA 2024a). Because the Yuba Subbasins are operated under conjunctive water management, it is important to understand that the sustainable yield is a long-term value. Thus, groundwater pumping may exceed these values during certain years, balanced by other years with reduced pumping, so that the long-term average level of pumping remains at or below the sustainable yield. The average groundwater pumping in the Yuba Subbasins from 2019-2023 was 166,313 AFY (YCWA 2024b), 72,687 AFY below the sustainable yield value. It should also be noted that these estimates are provided as a reference to assist in achieving sustainability when identifying future projects and management actions. SGMA does not incorporate these estimates directly into the sustainable management criteria. Rather, sustainability under SGMA is demonstrated by avoiding the undesirable results (as set forth in the sustainability indicators).[1]

6.4 Impact Assessment Methodology

6.4.1 Groundwater Analytical Approach

6.4.1.1 Background

As the Narrows Project would not involve any construction activities, construction impacts related to the Narrows Project are not analyzed. None of the construction-related activities associated with the YRDP would affect New Bullards Bar Reservoir's ability to make releases through the New Colgate Powerhouse, nor would any construction activities affect releases from Englebright Reservoir or agricultural diversion structures near Daguerre Point Dam. Accordingly, there would be no construction-related impacts from the Proposed Projects or their alternatives on agricultural water and thus no impacts on groundwater conditions. Because of this, construction impacts associated with groundwater are not analyzed further.

Potential groundwater impacts resulting from the Proposed Projects or alternatives are associated with surface water shortages from diversions from the lower Yuba River. As explained in Section 6.2.3, groundwater east of the alluvial Yuba Subbasins occurs in fractured bedrock and is not significantly affected by changes in Yuba River flow and stage. Accordingly, groundwater impacts in those areas are not analyzed further.

As previously described, SGMA requires that GSAs demonstrate sustainable groundwater use as shown by the avoidance of undesirable results evaluated through six sustainability indicators. Yuba Water Agency Board of Directors adopted the amended Yuba Subbasins GSP in January 2025[2] (YCWA 2024a), which supersedes the original GSP adopted in January 2020 that was approved

[1] For details on quantitative threshold values associated with each of the five sustainability indicators and the two additional non-regulatory levels, see Section 4.4 (Quantitative Sustainable Management Criteria) in the Yuba Subbasins GSP, including:

- Table 4-1: Minimum Thresholds, Measurable Objectives, and Historically-Full Aquifer Levels for Chronic Lowering of Groundwater Levels
- P. 4-23 – Minimum thresholds for reduction of groundwater storage
- P. 4-25 – Minimum thresholds for degraded water quality
- P. 4-26 – Minimum thresholds for land subsidence
- P. 4-26 – Minimum thresholds for depletions of interconnected surface water

[2] The Amended GSP is currently under review by DWR as of January 2025.

by DWR. Consistent with SGMA, the YGM was developed for the Yuba Subbasins, and the Yuba Subbasins GSP guides management of basin activities. This DEIR considers the sustainable management criteria for the five SGMA sustainability indicators that the GSP found to apply to the Yuba Subbasins as thresholds of significance for purposes of this analysis (seawater intrusion is not present in the Yuba Subbasins and not likely to occur).

The Proposed Projects generally have the potential to affect three of SGMA's sustainability indicators[3]: groundwater levels, groundwater storage, and depletions of interconnected surface water. The groundwater level analysis applies to these three SGMA sustainability indicators, as groundwater levels are used as proxy for the reduction of groundwater storage and depletions of interconnected surface water sustainability indicators. Therefore, this analysis focuses on the Proposed Projects' potential to cause chronic lowering of groundwater levels, which is the driving factor in maintaining sustainability in the Yuba Subbasins. Groundwater levels also reflect the ability of infrastructure to economically access groundwater and the sustainability of GDEs, to the extent they are connected to the aquifer that is being accessed for water supplies.

The environmental impact analysis for groundwater resources was developed through modeling of surface water deliveries under the Proposed Projects and the alternatives compared to surface water deliveries under the Existing Condition and the Future Baseline. Surface water modeling was performed using the YRDP Operations Model. Additional details on the modeling, including details on the scenarios used in the following subsections, are provided in Chapter 5, Surface Water Resources.

Reduction in surface water delivery is considered a potential impact to groundwater resources as deficiencies in surface water deliveries typically result in additional groundwater pumping to meet agricultural demands. In some cases, fallowing may occur rather than groundwater pumping, notably when the total reduction in surface water delivery exceeds the aggregate groundwater pumping capacity. For this analysis, groundwater pumping was assumed regardless of overall pumping capacity, as additional groundwater production wells could be installed to meet the demand rather than fallowing.

Groundwater analysis was performed with two different methods, based on the magnitude of increase in pumping. The Proposed Projects and Alternative 1 have small increases in pumping or small decreases in pumping and are analyzed through an analysis of the additional pumping in relation to the groundwater budget. Alternative 2 has a much higher increase in pumping and is analyzed through groundwater modeling to provide sufficient detail for this greater change in groundwater conditions.

The Proposed Projects and Alternative 1 use a groundwater-budget-based analytical approach. The groundwater budget was developed as part of the GSP (YCWA 2024a) through the use of the YGM and quantifies the inflows to and outflows from the groundwater system in the Yuba Subbasins. This allows for the change in groundwater pumping simulated by the YRDP Operations Model to be put into the context of the groundwater system. That is, the change in pumping on an average annual basis is compared to the overall groundwater budget to estimate the level of overdraft, if any, resulting from the change in pumping. That rate of decline, or overdraft, is then

[3] For details on the sustainability indicators, see Section 4.1 (Sustainability Indicators), page 4-2, in the Yuba Subbasins GSP.

applied over the entire Yuba Subbasins to estimate the impact to groundwater conditions. This approach of analyzing regional conditions is consistent with the long-term regional approach of the GSP, where minimum thresholds must be exceeded by 25 percent of wells for two consecutive years to be considered significant and unreasonable.

The average annual rate of decline is applied over a 5-year period, as impacts of increased groundwater pumping initially accrue to groundwater storage (and thus groundwater levels), with impacts shifting over time to the surface water system. The 5-year period was selected based on analysis performed in the GSP, which indicated that groundwater conditions generally stabilize within 5 years of pumping. Thus, after 5 years of pumping, the rate of declines in groundwater levels would be expected to be lower (YCWA 2024a), and this groundwater level impact would be indicative of the average impact over the life of the project.

Alternative 2 uses a groundwater-model-based analytical approach using the YGM due to the magnitude of potential impacts necessitating the use of the model to understand impacts to the hydrologic cycle. The YGM is an integrated water resources model designed to simulate the flow of surface water and groundwater in western Yuba County and southern Butte County. Developed using the Integrated Water Flow Model Version 2015 (IWFM-2015) software, the YGM incorporates detailed historical data from a recent 21-year period into baselines, including hydrogeologic conditions, land use, crop patterns, surface water diversions, and groundwater substitution transfer pumping. The YGM has been used for a wide range of hydrologic analyses, including the development of the GSP.

For use in this analysis, the Existing Condition and Future Baseline previously developed for the GSP were both modified to incorporate Alternative 2. The agricultural water supply shortages described in Section 5.5.7.2 were incorporated into the Alternative 2 YGM scenarios, one based on the Existing Condition and one based on the Future Baseline. The Alternative 2 YGM scenarios incorporate an increase in agricultural pumping and a decrease in surface water diversion equivalent to water supply shortages. This increased pumping and decreased diversion is first applied across Member Units without pre-1914 water rights (Brophy Water District, Dry Creek Mutual Water Company, Ramirez Water District, South Yuba Water District, and Wheatland Water District) with remaining volume, if any, distributed across the remaining Member Units (Browns Valley Irrigation District, Cordua Irrigation District, and Hallwood Irrigation Company), in proportion to the Member Unit's use in the associated baseline. The YGM Future Baseline simulates a 63-year-long hydrologic sequence, of which the hydrologic conditions are based on water years 1997 through 2017, repeated three times. This approach was also used in the development of water budgets and sustainable management criteria in the GSP. Thus, the Alternative 2 YGM scenario incorporates shortages described in Section 5.5.7.2 for this time period.

The Alternative 2 YGM scenarios provide simulated groundwater level data at the GSP's representative monitoring wells. Consistent with the GSP, the simulated March groundwater levels at each representative monitoring well are compared against the significance criteria.

6.4.1.2 Approach – Groundwater Levels, Storage, and Depletions of Interconnected Surface Water

An analysis was conducted of impacts on groundwater levels. As the GSP uses groundwater levels as a proxy for storage and for depletions of interconnected surface water, this analysis also covers the impacts associated with storage and with depletions of interconnected surface water.

For the Proposed Projects and Alternative 1, analyses of long-term regional impacts to the groundwater system were performed using available groundwater budget data combined with the change in overall groundwater pumping for each alternative. This approach, as opposed to a costly and time-consuming groundwater modeling exercise using the YGM, is appropriate, proportional to the potential impacts, and sufficient to inform decision makers and the public.

Groundwater budgets developed for the GSP (YCWA 2024a) show generally balanced inflows and outflows for historical, current, projected, and projected with climate change conditions. These balanced conditions are reflective of sustainable groundwater conditions. The inflows and outflows are also similar in magnitude across the different temporal periods. The North Yuba Subbasin has inflows and outflows of approximately 120,000 AFY (Table 6.41) and the South Yuba Subbasin has inflows and outflows of approximately 170,000 AFY (Table 6.42). Cumulatively, there are approximately 290,000 AFY of inflows and outflows for the North Yuba and South Yuba Subbasins. Focusing on the outflows, 60,000 AFY of North Yuba groundwater extraction and 100,000 AFY of South Yuba groundwater extraction collectively contribute 160,000 AFY, approximately 55 percent, of the total outflows from the two subbasins.

Table 6.4-1. Groundwater Budgets, Annual Average Conditions, North Yuba Subbasin.

Component	Historical Budget Volume (AFY)	Current Budget Volume (AFY)	Projected Water Volume (AFY)	Projected Water Volume with Climate Change (AFY)
INFLOWS				
Subsurface inflow	36,300	36,800	36,800	37,200
Wyandotte Creek	7,600	7,100	7,200	7,300
Sutter	21,600	22,200	22,300	22,600
South Yuba	7,100	7,500	7,300	7,300
Deep percolation of rainfall	16,900	16,100	16,000	16,300
Deep percolation of applied water	23,300	22,500	22,300	22,400
Recharge from rivers and streams	10,100	10,600	10,700	10,900
Recharge from conveyance systems	6,000	6,300	6,200	6,400
Recharge from Goldfields	16,200	16,400	16,600	16,500
Groundwater inflow from foothills	4,700	4,300	4,300	4,300
Other	7,000	6,300	6,200	6,300
Total Inflow	***120,500***	***119,300***	***119,100***	***120,300***
OUTFLOWS				
Groundwater extraction	58,800	59,400	59,100	59,900
Discharge to rivers and streams	22,200	21,900	21,700	21,600
Subsurface outflow	15,000	13,900	14,300	14,600
Wyandotte Creek	5,500	5,500	5,400	5,600
Sutter	1,800	1,600	1,600	1,600
South Yuba	7,700	6,800	7,300	7,400
Discharge to Goldfields	17,400	17,100	17,000	17,100
Other	7,300	6,600	6,500	6,600
Total Outflow	***120,700***	***118,900***	***118,600***	***119,800***
Change in Storage (Inflow-Outflow)	***-200***	***400***	***500***	***500***

Source: YCWA 2024a

Note: Further refinements of the YGM in the future, including to boundary conditions, aquifer parameters, soil parameters, stream geometry parameters, water management assumptions, and others may result in changes to the water budget component estimates.

Table 6.4-2. Groundwater Budgets, Annual Average Conditions, South Yuba Subbasin

Component	Historical Budget Volume (AFY)	Current Budget Volume (AFY)	Projected Water Volume (AFY)	Projected Water Volume with Climate Change (AFY)
INFLOWS				
Subsurface inflow	18,100	13,800	14,900	14,800
North Yuba	7,700	6,800	7,300	7,400
Sutter	5,800	5,200	5,500	5,500
North American	4,600	1,800	2,100	1,900
Deep percolation of rainfall	28,800	28,800	28,500	29,100
Deep percolation of applied water	39,000	38,200	36,900	36,900
Recharge from rivers and streams	38,500	37,800	38,300	39,200
Recharge from conveyance systems	8,900	10,800	10,500	10,900
Recharge from Goldfields	29,500	29,300	29,500	29,300
Groundwater inflow from foothills	1,200	1,200	1,200	1,200
Other	14,600	12,300	12,500	12,800
Total Inflow	**178,600**	**172,200**	**172,300**	**174,200**
OUTFLOWS				
Groundwater extraction	107,300	99,200	102,600	103,700
Discharge to rivers and streams	13,100	12,200	11,700	11,900
Subsurface outflow	15,600	21,200	19,700	19,900
North Yuba	7,100	7,500	7,300	7,300
Sutter	5,900	7,500	6,800	6,800
North American	2,600	6,200	5,600	5,800
Discharge to Goldfields	25,500	25,600	25,400	25,600
Other	10,100	10,900	10,200	10,600
Total Outflow	**171,600**	**169,100**	**169,600**	**171,700**
Change in Storage (Inflow-Outflow)	**7,000**	**3,100**	**2,700**	**2,500**

Source: YCWA 2024a

Note: Further refinements of the YGM in the future, including to boundary conditions, aquifer parameters, soil parameters, stream geometry parameters, water management assumptions, and others may result in changes to the water budget component estimates.

An increase in groundwater pumping would result in lower groundwater levels. While impacts from increased groundwater extraction would be focused near wells serving agricultural lands formerly receiving surface water, impacts can be approximated assuming a uniform distribution across the 80,000 acres of Member Unit area currently receiving surface water. These impacts are spread uniformly by dividing the total increase in pumping by the total surface area. The result is a volume per acre representing the annual change in groundwater storage compared to the Existing Condition, presented in units of acre-feet per acre. Since groundwater is stored within a matrix of gravel, sand, silt, and clay, the annual change in storage results in a much larger drop in groundwater levels than would be suggested by the total water volume. Using a typical specific yield for the Yuba Subbasins of 0.1, this equates to a reduction in groundwater levels, in feet, that is 10 times the storage value, again compared to the Existing Condition. This reduction in groundwater levels would continue on a long-term average basis, except to the extent water is provided from other portions of the hydrologic system. Note that the rate of decline may be faster if pumping occurs in semi-confined or confined portions of the aquifer, as this rate of reduction in groundwater levels is based on unconfined conditions.

Over time, other components of the system would adjust to this lower groundwater level, including increased recharge from streams, reduced discharge to streams, decreased outflow to neighboring subbasins, and/or increased inflow from neighboring subbasins. Each of these components has potential impacts associated with them. The total impact to groundwater in storage (declining groundwater levels) and other impacts to the hydrologic system (depletions of surface water system and neighboring subbasins) would, on a long-term basis, equal the total increase in

groundwater extraction associated with the alternative. Estimating the breakdown of those components requires the use of a groundwater model. However, for relatively small changes in the system such as under the Proposed Projects and Alternative 1, it can be assumed that the early impacts are to lowered groundwater levels, with a shift towards depletions of surface water systems over time (DWR 2024). The long-term decline is approximated using a 5-year period at the calculated annual rate of decline. The 5-year period is used as the GSP indicates that 90 percent of depletions of interconnected surface water occur within 5 years of pumping, suggesting that groundwater level declines are at a lower rate after that period.

Assuming the initial impacts are to groundwater storage and thus groundwater levels, 5 years of decline would result in five times the annual rate of decline in groundwater levels. The result, estimated 5-year decline in groundwater levels due to the Proposed Projects or Alternative 1, is then subtracted from the most recently published March groundwater levels at the representative monitoring wells and compared to the corresponding local management level, as defined in the GSP.

Impacts would be considered significant if 25 percent of the wells were found to exceed the local management level for two consecutive years. This significance criterion is based on the GSP definition of undesirable results, which is 25 percent of wells exceeding the minimum threshold for two consecutive years. Local management levels are used here instead of minimum thresholds as local management levels indicate "locally preferred" minimum groundwater levels. Groundwater levels below the local management level may not be significant and unreasonable—the requirement by SGMA for minimum thresholds—but would be significant as dewatering of domestic wells would be likely if local management levels were exceeded on a regional basis. While the GSP uses local management levels as an adaptive management criterion based on exceedances at any representative monitoring wells, the 25 percent over 2 years component of undesirable results is retained to indicate regional significance rather than localized impacts.

For Alternative 2, analyses of long-term regional impacts to the groundwater system were performed using the YGM. This more detailed approach is appropriate for Alternative 2 due to the larger magnitude of the increase in groundwater pumping. The YGM is able to simulate the changes in the broader groundwater/surface water system as a result of pumping triggered by surface water deficiencies. Initially, this has lowered groundwater levels and associated reduction in groundwater storage. Over time, the lowered groundwater levels propagate across the region, resulting in increases in recharge from surface water bodies, decreases in groundwater discharge to surface water bodies, and changes in subsurface flows at the boundaries of the Yuba Subbasins. While a water budget approach is appropriate for smaller volumes of pumping, larger volumes of pumping, such as under Alternative 2, have wide reaching impacts to both the groundwater and surface water model, necessitating the use of the YGM.

Consistent with the Proposed Project and Alternative 1, impacts would be considered significant if 25 percent of the wells were found to exceed the local management level for two consecutive years.

6.4.1.3 Approach – Groundwater Quality

The Yuba Subbasins are, in general, healthy with respect to groundwater quality. Groundwater quality samples collected as part of monitoring under the GSP indicate that regional ambient groundwater quality is suitable for the beneficial uses of groundwater in the Yuba Subbasins. The GSP includes electrical conductivity values, an indicator of salinity, over a period starting in the mid-1960s at key wells. The trends at each well do not suggest impacts from pumping or water levels, including dry years with increased pumping or the period from the 1970s and early 1980s when groundwater levels in the South Yuba Subbasin reached historical lows. Thus, while any increase in pumping increases the potential for water quality issues associated with upwelling of deeper saline water or migration of plumes, increases in groundwater pumping within historical ranges of groundwater levels are not expected to impact groundwater quality. The same analysis used for groundwater level is thus incorporated for groundwater quality.

6.4.1.4 Approach – Land Subsidence

It is thought that there are not significant quantities of compressible clays in the upper portions of the aquifer in the Yuba Subbasins, therefore limiting the risk of subsidence if those materials dewater. Additionally, local management levels and minimum thresholds for the chronic lowering of groundwater levels are established at levels above which land subsidence would not occur. Thus, while any increase in pumping increases the potential for subsidence, increases in groundwater pumping within historical ranges of groundwater levels are not expected to result in subsidence. The same analysis used for groundwater level is thus incorporated for land subsidence.

6.4.1.5 Approach – Indirect Impacts

For the programmatic analysis of YB/DS operations under Alternative 1, potential reductions in water supplies from NID and PG&E associated with the 15,600 AF of additional flow from the YB/DS projects in Dry and Critical WYs were used to identify whether any such reduction would result in groundwater pumping that could have potential groundwater impacts.

6.4.2 Impact Indicators and Significance Criteria

The thresholds of significance for impacts are based on the environmental checklist in Appendix G to the State CEQA Guidelines, as amended, and were refined to address potential impacts specific to groundwater resources in the Project Area. The environmental analysis conducted in this DEIR will apply the following significance thresholds to determine the potential impacts of the Proposed Projects and alternatives.

An impact on groundwater resources would be considered significant if implementation of the Proposed Projects or alternatives would conflict with or obstruct implementation of the GSP by resulting in any of the following:

- **Impact GW-1:** A reduction in groundwater levels, as a result of increases in groundwater pumping resulting from decreases in average annual surface water supply availability, to the extent that 25 percent of representative monitoring wells exceed local management levels for groundwater levels for two consecutive years, as defined in the GSP (YCWA

2024a), would be considered significant. This reduction in groundwater levels would also result in significant impacts, as described in Section 6.4.1, related to:
    - Groundwater storage
    - Groundwater quality
    - Land subsidence
    - Depletion of interconnected surface water

- **Indirect Impact GW-1**: Alternative 1 has the ability to affect diversions from NID and PG&E's Yuba-Bear and Drum-Spaulding projects to the Drum and South Yuba Canals (combined in modeling as Spaulding Canals). An impact to groundwater would occur if the reduction in NID and PG&E's water supply deliveries relative to the Future Baseline resulted in groundwater pumping that substantially decreased groundwater supplies or interfered substantially with groundwater recharge such that the project may impede sustainable groundwater management or conflict with or obstructed implementation of a water quality control plan or groundwater sustainability plan.

6.5 Environmental Impact Analysis

6.5.1 Proposed Projects Compared to the Existing Condition

YRDP Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under the Proposed YRDP Project, on average 700 AFY more groundwater would be pumped than under the Existing Condition. This level of pumping change would not conflict with or obstruct implementation of the GSP. A change of 700 AFY is a negligible volume of additional groundwater pumping within the Yuba Subbasins.

The increased groundwater extraction would result in lower groundwater levels. While the impacts from increased groundwater extraction would be focused near wells serving agricultural lands formerly receiving surface water, impacts can be approximated assuming a uniform distribution across the 80,000 acres of Member Unit area currently receiving surface water. Impacts of 700 AFY over 80,000 acres results in 0.00875 AF/acre of less groundwater in storage each year on average (700 AFY ÷ 80,000 acres = 0.00875 AF/acre per year), compared to the Existing Condition. Because groundwater is stored within a matrix of gravel, sand, silt, and clay, the 0.00875 AF/acre of reduced water results in a much larger drop in groundwater levels than would be suggested by the total water volume. Using a typical specific yield for the Yuba Subbasins of 0.1, this equates to a reduction in groundwater levels of 0.0875 feet/year on average, compared to the Existing Condition. This 0.0875 feet/year reduction would continue on a long-term average basis, except to the extent water is provided from other portions of the hydrologic system. Note that the rate of decline may be faster if pumping occurs in semi-confined or confined portions of the aquifer, as this 0.0875 feet/year value is based on unconfined conditions.

Assuming the initial impacts are to groundwater storage and thus groundwater levels, five years of decline would result in approximately 0.438 feet (5.25 inches) of decline in groundwater levels. The 0.438 feet of decline in groundwater levels is applied to the most recent reported March groundwater levels for GSP compliance with local management levels (March 2023). March 2023 groundwater levels were between 28 and 148 feet above mean sea level (YCWA 2024b). A decline

of 0.438 feet would result in 0 out of 13 wells (0 percent) in the North Yuba Subbasin and 0 out of 18 wells (0 percent) in the South Yuba Subbasin violating the local management level.

As explained above, a reduction in groundwater levels resulting in 25 percent of monitoring wells violating local management levels for 2 consecutive years would also indicate adverse impacts related to groundwater storage, groundwater quality, land subsidence, and depletions of interconnected surface water. As less than 25 percent of the wells would violate the local management level as a result of the Proposed YRDP Project, these impacts would be **less than significant**. No CEQA mitigation is required.

Narrows Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to the Proposed Narrows Project and thus no associated significant changes in groundwater. Accordingly, the impacts of the Proposed Narrows Project on groundwater levels would be **less than significant**, and no CEQA mitigation is required.

6.5.2 Proposed Projects Compared to the Future Baseline

YRDP Impact GW-FPP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under the Proposed YRDP Project, on average 700 AFY more groundwater would be pumped than in the Future Baseline. As explained above for YRDP Impact GW-PP-1, a change of 700 AFY is a negligible volume of additional groundwater pumping within the Yuba Subbasins and would result in **less than significant** impacts to groundwater levels and associated stability indicators. No CEQA mitigation is required.

Narrows Impact GW-FPP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts attributable to the Proposed Narrows Project and thus no associated significant changes in groundwater. Accordingly, the impacts of the Proposed Narrows Project on groundwater levels would be **less than significant**, and no CEQA mitigation is required.

6.5.3 Alternative 1 Compared to the Existing Condition

As described in Section 4.4, this comparison is misleading for the water resources analysis; it is provided for informational purposes only.

YRDP Impact GW-Alt1-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under Alternative 1 YRDP operations, on average, 1,100 AFY less groundwater would be pumped than under the Existing Condition. A decrease in pumping would likely result in higher groundwater levels and therefore would not conflict with or obstruct implementation of the GSP.

Narrows Impact GW-Alt1-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but there would be no additional Narrows Project flow requirements under Alternative 1. As a result, there would be negligible agricultural water supply-related impacts attributable to the Narrows Project operations under Alternative 1 and thus no associated significant changes in groundwater.

6.5.4 Alternative 1 Compared to the Future Baseline

YRDP Impact GW-FAlt1-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under Alternative 1 YRDP operations, on average, 900 AFY more groundwater would be pumped than in the Future Baseline. This level of pumping change would not conflict with or obstruct implementation of the GSP. A change of 900 AFY is a negligible volume of additional groundwater pumping within the Yuba Subbasins.

The increased groundwater extraction would result in lower groundwater levels. While the impacts from increased groundwater extraction would be focused near wells serving agricultural lands formerly receiving surface water, impacts can be approximated assuming a uniform distribution across the 80,000 acres of Member Unit area currently receiving surface water. Impacts of 900 AFY over 80,000 acres results in 0.01125 AF/acre of less groundwater in storage each year on average (900 AFY ÷ 80,000 acres = 0.01125 AF/acre per year), compared to the Future Baseline. Because groundwater is stored within a matrix of gravel, sand, silt, and clay, the 0.01125 AF/acre of reduced water results in a much larger drop in groundwater levels than would be suggested by the total water volume. Using a typical specific yield for the Yuba Subbasins of 0.1, this equates to a reduction in groundwater levels of 0.1125 feet/year on average, compared to the Future Baseline. This 0.1125 feet/year reduction would continue on a long-term average basis, except to the extent water is provided from other portions of the hydrologic system. Note that the rate of decline may be faster if pumping occurs in semi-confined or confined portions of the aquifer, as this 0.1125 feet/year value is based on unconfined conditions.

Assuming the initial impacts are to groundwater storage and thus to groundwater levels, 5 years of decline would result in approximately 0.563 feet (6.75 inches) of decline in groundwater levels. The 0.563 feet of decline in groundwater levels is applied to the most recent reported March groundwater levels for GSP compliance (March 2023). March 2023 groundwater levels were between 28 and 148 feet above mean sea level (YCWA 2024b). A decline of 0.563 feet would result in 0 out of 13 wells (0 percent) in the North Yuba Subbasin and 0 out of 18 wells (0 percent) in the South Yuba Subbasin violating the local management level.

As explained above, a reduction in groundwater levels resulting in 25 percent of monitoring wells violating local management levels for two consecutive years would also indicate adverse impacts related to groundwater storage, groundwater quality, land subsidence, and depletions of interconnected surface water. As less than 25 percent of the wells would exceed the local management level as a result of YRDP operations under Alternative 1, these impacts would be **less than significant**.

Narrows Impact GW-FAlt1-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but there would be no additional Narrows Project flow requirements under Alternative 1. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations under Alternative 1 and thus no associated significant changes in groundwater. Accordingly, the impacts of Narrows Project operations on groundwater levels under Alternative 1 would be **less than significant**.

Indirect Impact GW-FAlt1-1: Indirect Impacts on Groundwater Resources from Alternative 1 YB/DS Operations Upstream of the YRDP

Alternative 1 includes a contribution of 15,600 AF of water from the Yuba-Bear/Drum-Spaulding projects that would be provided under new FERC licenses for those projects in dry and critically dry years. The following discussion provides a programmatic analysis of the potential indirect impacts to groundwater associated with this component of Alternative 1, relative to the Future Baseline.

As discussed in Chapter 5, Yuba Water's modeling indicates there would be reductions in Spaulding Canals' diversions of at least 1 percent in 17 out of 52 years, and at least 5 percent in 4 out of 52 years, with an average reduction of 2.6 TAF and a maximum of 10.5 TAF. In response to reductions in supplies from the Yuba River watershed, NID water users could make up for reductions in Yuba River water supplies with a combination of additional groundwater pumping, conservation, and increased purchases from PG&E (NID 2021). PCWA could make up for shortages with a combination of additional groundwater pumping, conservation, and increased diversions from PCWA's Middle Fork Project (PCWA 2021).

For purposes of this programmatic analysis, it is reasonably foreseeable that YB/DS operations under Alternative 1 would include available protective measures developed in collaboration with regulatory agencies to ensure that Alternative 1 would not result in conflicts with or obstruct implementation of a water quality control plan or GSP. Furthermore, the operation of Alternative 1 is unlikely to result in groundwater pumping that would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management. Therefore, indirect groundwater impacts would be **less than significant**. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

6.5.5 Alternative 2 Compared to the Existing Condition

For use in this analysis, the Existing Condition and the Future Baseline previously developed for the GSP were modified to incorporate Alternative 2. The agricultural water supply shortages described in Section 5.5.7.2 were incorporated into the Alternative 2 YGM scenarios. The Alternative 2 YGM scenarios incorporate an increase in agricultural pumping and decrease in surface water diversion equivalent to the water supply shortages. This increased pumping and decreased diversion is first applied evenly across Member Units without pre-1914 water rights (Brophy Water District, Dry Creek Mutual Water Company, Ramirez Water District, South Yuba Water District, and Wheatland Water District) with remaining volume, if any, distributed evenly across the remaining Member Units (Browns Valley Irrigation District, Cordua Irrigation District, and Hallwood Irrigation Company), as shown in Table 6.5-3. Alternative 2 would result in a total average annual shortage (or increased groundwater pumping) of 47,100 AFY on average with a maximum annual shortage of 247,400 AFY.

Table 6.5-3. Average Annual and Maximum Annual Shortage, and Equivalent Increases in Groundwater Pumping, by Member Unit, within the YGM Scenario 2 Simulation Period

Member Unit	Average Annual Shortage (AFY)	Maximum Annual Shortage (AFY)
Brophy Water District	14,000	47,600
Browns Valley Irrigation District	2,600	21,900
Cordua Irrigation District	7,500	63,200
Dry Creek Mutual Water Company	2,400	9,100
Hallwood Irrigation District	6,800	56,700
Ramirez Water District	3,500	12,300
South Yuba Water District	7,000	24,200
Wheatland Water District	3,300	12,400

The YGM Existing Condition and Future Baseline both simulate hydrologic conditions based on water years 1997 through 2017, repeated three times; thus, the Alternative 2 YGM scenarios incorporate shortages described in Section 5.5.7.2 for this time period.

Under both baselines, the shortages and equivalent increases in pumping are focused during the irrigation season, as shown in Figure 6.5-1, which shows the increases in pumping by Member Unit on a monthly basis.



Figure 6.5-1. Monthly Shortages, and Equivalent Increases in Groundwater Pumping, by Member Unit, within the YGM Scenario 2 Simulation Period.

The Alternative 2 YGM scenarios provide simulated groundwater level data at the GSP's representative monitoring wells. Consistent with the GSP, the simulated March groundwater levels at each representative monitoring well are compared against the local management levels. These results are aggregated and compared against the significance criteria. Conditions where either the North Yuba or South Yuba Subbasin meets the significance criteria would be considered potentially significant.

YRDP Impact GW-Alt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Alternative 2 causes local management level exceedances in the Yuba Subbasins, with groundwater levels in 14 representative monitoring wells (45 percent) deeper than the GSP-defined local management level for two consecutive March measurements (simulated March groundwater levels under 2016 and 2017 hydrologic conditions). Figure 6.5-2 shows the locations of these wells.

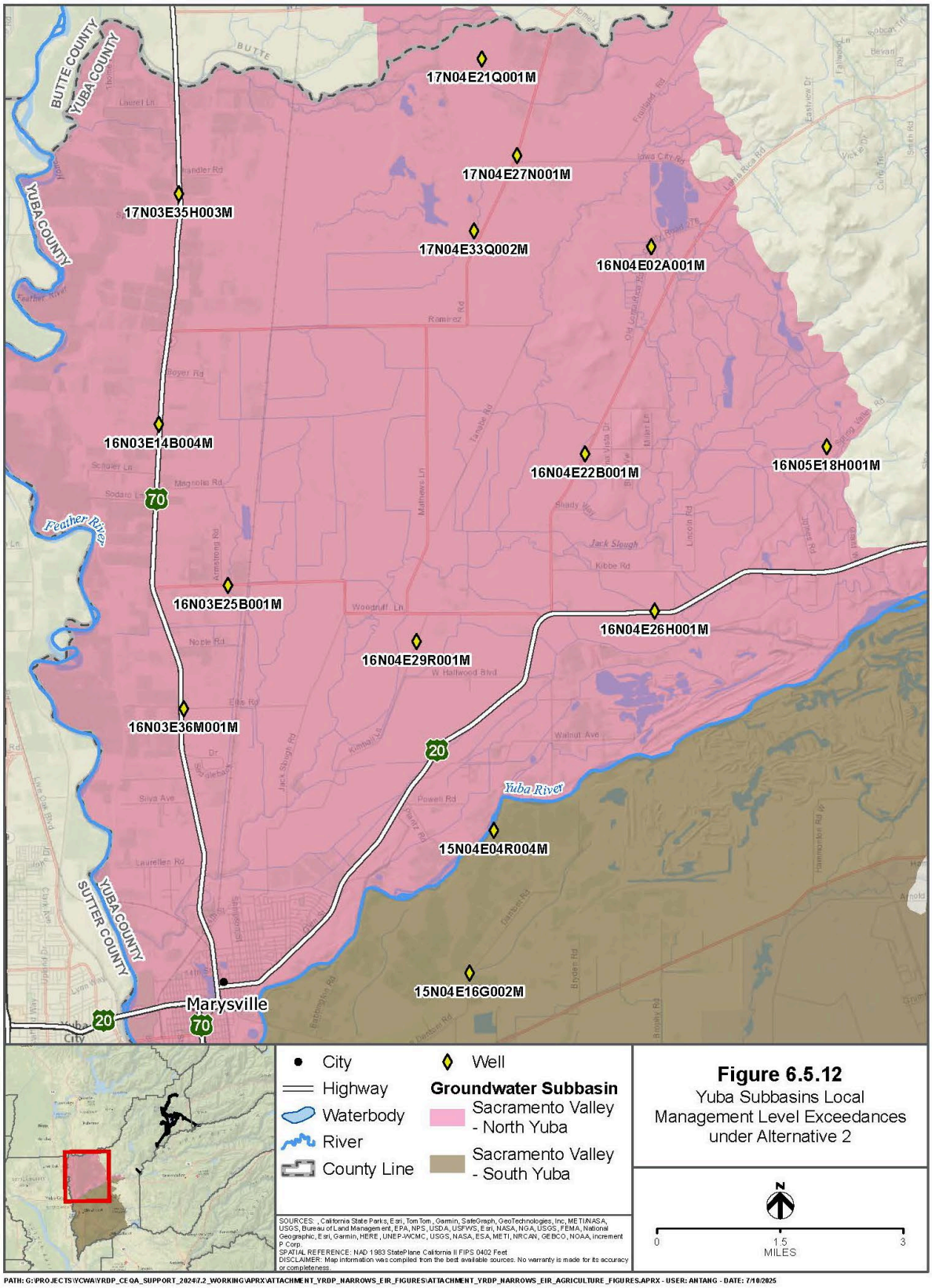

Figure 6.5-2. Yuba Subbasins Local Management Level Exceedances under Alternative 2.

Narrows Impacts GW-Alt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but there would be no additional Narrows Project flow requirements under Alternative 2. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations under Alternative 2 and thus no associated significant changes in groundwater.

6.5.6 Alternative 2 Compared to the Future Baseline

The analysis used for Alternative 2 compared to the Future Baseline is described above in Section 6.5.5. From a groundwater perspective, the Existing Condition and Future Baseline are similar, with Future Baseline incorporating some level of urbanization in portions of the Yuba Subbasins. Alternative 2 incorporates a dramatic increase in surface water shortages and associated groundwater production. The differences between Alternative 2 and either the Existing Condition or Future Baseline are much greater than the small difference between the Existing Condition and Future Baseline themselves. As such, the impacts of Alternative 2 as expressed as local management level exceedances are the same when compared using either the Existing Condition or Future Baseline.

YRDP Impact GW-FAlt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Alternative 2 causes local management level exceedances in the Yuba Subbasins, with groundwater levels in 14 representative monitoring wells deeper than the GSP-defined local management level for two consecutive March measurements (simulated March groundwater levels under 2016 and 2017 hydrologic conditions) (see Figure 6.5-2).

These 14 wells represent 45 percent of the representative monitoring wells in the Yuba Subbasins. This meets the significance criteria for groundwater levels and indicates that substantial adverse impacts related to groundwater storage, groundwater quality, land subsidence, and depletions of interconnected surface water would occur. These impacts could not be avoided through securing alternate water supplies or increasing the efficiency of existing water uses, as there are no economically feasible alternate water supplies for the area, and local growers already use advanced techniques for efficient water use. Accordingly, Alternative 2 YRDP operations would result in **significant and unavoidable** impacts.

Narrows Impacts GW-FAlt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but there would be no additional Narrows Project flow requirements under Alternative 2. As a result, there would be negligible agricultural water supply-related impacts attributable to Narrows Project operations under Alternative 2 and thus no associated significant changes in groundwater. Accordingly, the impacts of Narrows Project operations on groundwater levels under Alternative 2 would be **less than significant**.

6.5.7 No Project Alternative Compared to the Existing Condition

YRDP Impact GW-NP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under the No Project Alternative, Yuba Water would cease YRDP hydropower generation but would continue existing YRDP operations for flood control and water supply purposes. Because operations for water supply purposes would be essentially unchanged, no changes to groundwater pumping within the Yuba Subbasins would be expected. YRDP operations under the No Project Alternative would thus have **no impact** on groundwater resources.

Narrows Impacts GW-NP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

Under the No Project Alternative, Yuba Water would cease Narrows Project hydropower generation but would continue existing Narrows Project operations for flood management and water supply purposes. Because operations for water supply purposes would be essentially unchanged, no changes to groundwater pumping within the Yuba Subbasins would be expected. Narrows Project operations under the No Project Alternative would thus have **no impact** on groundwater resources.

6.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The following sections describe this analysis for the projects discussed in Section 6.5 above.

Hydrologic modeling was used to evaluate the potential cumulative effects of the Proposed Projects and alternatives in combination with other likely changes in operations on hydrology and water supply. The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. The assumptions used to categorize future hydrologic cumulative conditions that are quantitatively simulated are presented in Chapter 5. To the extent feasible, potential cumulative impacts on resources dependent on hydrology or water supply are analyzed quantitatively.

As described in Chapter 4, because several projects considered as part of the cumulative condition cannot be accurately characterized for hydrologic modeling purposes at this time, either due to the nature of the particular project or because specific operations details are only in the preliminary phases of development, these projects are evaluated qualitatively. Only those projects that could affect groundwater resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to regional water supply operations, or water-related and water dependent resources that also could be affected by the Proposed Projects or the alternatives (see Chapter 4). For this reason, only the limited numbers of projects with the potential to cumulatively impact groundwater resources are specifically considered qualitatively in the cumulative impacts analysis for groundwater resources:

- FERC Hydropower Projects in the Yuba River Watershed:
    - *South Feather Power Project (FERC Project 2088-068) Relicensing*
    - *Yuba-Bear Hydroelectric Project (Yuba-Bear Project) (FERC Project No. 2266) Relicensing,*
    - *Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310)*
    - *Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing*
- Water Storage and Conveyance Projects:
    - *Yuba Subbasins Water Management Plan: A Groundwater Sustainability Plan (GSP) Implementation*
    - *WWD In-Lieu Recharge Project*
    - *Yuba County Integrated Regional Water Management Plan (IRWMP) Implementation*
    - *Various Water Supply Improvement Projects*
- Water Transfer and Acquisition Programs:
    - *Lower Yuba River Accord Water Transfer Program Extension*
- Flood Control Projects:
    - *New Bullards Bar Dam ARC Spillway Project*
    - *USACE NBB Dam and Reservoir Water Control Manual (WCM) Update*
    - *500-year Flood Protection Project*
    - *Marysville Ring Levee*
    - *Yuba River North Training Wall (NTW) Project*
    - *Goldfields Multi-Benefit Project*
- Ecosystem Restoration and Fisheries Improvement Projects:
    - *Bay-Delta Water Quality Control Plan Update – HR & L*
- Other Local Projects in the Yuba Region:
    - *Cordua Groundwater Monitoring Well*

These projects are described in Chapter 4, and their impacts related to groundwater resources are addressed below.

6.6.1 Cumulative Condition with Proposed Projects Compared to the Existing Condition

As described in Section 6.4.1, there are not expected to be any construction-related effects by the Proposed Projects on groundwater. Therefore, construction-related activities under the Proposed Projects would not contribute to cumulative effects with other past, present, or reasonably foreseeable projects to adversely affect groundwater resources in the Yuba River or downstream. Moreover, the Proposed Projects would not result in any groundwater impacts east of the alluvial Yuba Subbasins and therefore would not contribute to cumulative effects in those areas.

As described in Section 6.4.1, potential groundwater impacts are associated with surface water shortages from diversions from the lower Yuba River or from direct impacts to groundwater resources in the Yuba Subbasin. None of the cumulative projects listed above would increase groundwater pumping, decrease groundwater recharge, or otherwise change groundwater relative to the Existing Condition, and therefore these projects would not have a direct impact on groundwater resources that would combine with the impacts of the Proposed Projects to create a significant cumulative impact. One project, Cordua Groundwater Monitoring Well, would improve groundwater monitoring but would have no impact on groundwater conditions. Additionally, none of the cumulative projects would result in agricultural surface water shortages that would indirectly impact groundwater resources.

Overall, the Proposed Projects would not result in any significant impacts to groundwater, and as explained above, the less-than-significant groundwater impacts of the Proposed Projects would not combine with effects of other cumulative past, present, and future projects to create a significant cumulative impact. Thus, under the Cumulative Condition, including the Proposed Projects, the cumulative impact to groundwater resources would be less than significant.

YRDP Cumulative Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

As explained above, under the Cumulative Condition, including the Proposed Projects, there would not be a significant cumulative impact to groundwater resources relative to the Existing Condition. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** to groundwater.

Narrows Cumulative Impact GW-PP-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

As explained above, under the Cumulative Condition, including the Proposed Projects, there would not be a significant cumulative impact to groundwater resources relative to the Existing Condition. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** to groundwater.

6.6.2 Cumulative Condition with Alternative 1 Compared to the Existing Condition

The Cumulative Condition, including Alternative 1, would include the same cumulative past, present, and future projects and the same non-flow YRDP and Narrows Project operations addressed above in Section 6.6.1. Overall, Alternative 1 would not result in any significant impacts to groundwater, and the less-than-significant groundwater impacts under Alternative 1 would not combine with effects of other cumulative past, present, and future projects to create a significant cumulative impact. Thus, under the Cumulative Condition, including Alternative 1, the cumulative impact to groundwater resources would be less than significant.

YRDP Cumulative Impact GW-Alt1-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

As explained above, under the Cumulative Condition, including Alternative 1, there would not be a significant cumulative impact to groundwater resources relative to the Existing Condition. Accordingly, YRDP operations under Alternative 1 would result in a **less than significant cumulative impact** to groundwater.

Narrows Cumulative Impact GW-Alt1-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

As explained above, under the Cumulative Condition, including Alternative 1, there would not be a significant cumulative impact to groundwater resources relative to the Existing Condition. Accordingly, Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** to groundwater.

6.6.3 Cumulative Condition with Alternative 2 Compared to the Existing Condition

The Cumulative Condition, including Alternative 2, would include most of the same cumulative past, present, and future projects and the same non-flow YRDP and Narrows Project operations as for the cumulative conditions described under the Proposed Projects in Section 6.6.1. However, as explained above, YRDP operations under Alternative 2 would result in significant and unavoidable groundwater impacts. Accordingly, under the Cumulative Condition, including Alternative 2, there would be a significant cumulative groundwater impact.

YRDP Cumulative Impact GW-Alt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

As explained above, under the Cumulative Condition, including Alternative 2, there would be a significant cumulative impact to groundwater resources relative to the Existing Condition. This significant impact would be largely attributable to YRDP operations under Alternative 2, and therefore the incremental contribution of those operations to the cumulative impact would be cumulatively considerable. As explained above, this impact cannot be reduced through alternative water supplies or increased efficiency of water use. Accordingly, YRDP operations under Alternative 2 would result in a **significant and unavoidable cumulative impact** to groundwater.

Narrows Cumulative Impact GW-Alt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators

As explained above, under the Cumulative Condition, including Alternative 2, there would be a significant cumulative impact to groundwater resources relative to the Existing Condition. However, this significant impact would be largely attributable to YRDP operations under Alternative 2. Narrows Project operations under Alternative 2 would continue to be coordinated with YRDP operations but would not include additional flow requirements that would significantly change groundwater. Thus, Narrows Project operations under Alternative 2 would not have a cumulatively considerable incremental contribution to the cumulative impact and would therefore result in a **less than significant cumulative impact** to groundwater.

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CHAPTER 7

ENERGY

7.1 Introduction

This section describes the environmental setting and regulatory framework related to energy, and it identifies direct, indirect, and cumulative impacts of the Proposed Projects and the alternatives during construction, and O&M. The analysis focuses on the anticipated energy consumption of the Proposed Projects' construction and operations, and if such consumption would be wasteful and inefficient. It will also address electrical generation resulting from the Proposed Projects and the alternatives, and its potential impacts.

7.2 Environmental Setting

7.2.1 Electrical Generation

The purpose of the YRDP is to continue to provide a source of hydroelectric power and flood control and serve as a water supply for both domestic and irrigation purposes (FERC 2019). Yuba Water owns four powerhouses in the Yuba River watershed, all providing hydroelectric power. The powerhouses and their nameplate generation capacity are as follows:

- New Colgate – 315 MW,
- Narrows 1 – 12 MW,
- Narrows 2 – 55 MW, and
- NBB Minimum Flow – 150 kW.

The New Colgate Powerhouse is used for a combination of generation and ancillary services. Yuba Water generally dispatches its generation according to California Independent System Operator (CAISO) system-wide demands. Ancillary services are another CAISO market of energy products used to maintain grid stability and reliability. Depending on energy demand, the New Colgate Powerhouse generation can ramp up (or down) from a minimum of 1 MW to the nameplate capacity of 315 MW. When releases from New Bullards Bar Dam exceed approximately 20,000 cfs, the water surface elevation in the New Colgate Powerhouse tailrace is too high for operations, so the New Colgate Powerhouse ceases operations.

The New Bullards Bar Minimum Flow Powerhouse is operated as a baseload facility – a facility that assists in providing the minimum level of constant power supply that a utility or power grid must produce to meet the continuous and consistent demand for electricity (FERC 2019). The Narrows 2 Powerhouse, is also operated as a baseload facility, as is the Narrows 1 Powerhouse, acquired from PG&E in 2020 (YCWA 2023).

Yuba Water operates both Narrows 1 and Narrows 2 powerhouses to provide flow to the lower Yuba River. Due to its ability to being qualified as a renewable energy source, Yuba Water

preferentially operates the Narrows 1 Powerhouse, except during its annual maintenance outage period, generally scheduled for 14 days in early June. The Narrows 2 Powerhouse includes both a partial bypass and a full-flow bypass that are used when releases from the Narrows 2 Powerhouse are lower than the powerhouse's minimum generating flow (around 350 cfs). There is also a 14-day annual maintenance outage at the Narrows 2 Powerhouse, which has historically been in early September. Other than during these outage periods, Yuba Water generally operates the two powerhouses based on the total scheduled release from Englebright Dam. See Table 7.2-1 for a summary of how each powerhouse is operated at varied flow ranges. When flows below Englebright Dam exceed 4,130 cfs, both powerhouses operate at maximum levels, and Englebright Dam spills any remaining flow. Both powerhouses can continue to operate under extremely high flows over Englebright Dam.

Table 7.2-1. Typical distribution of flows under normal operations (i.e., excluding brief transition periods) among Narrows 2 Powerhouse (generation only), Partial Bypass, Full Bypass and Narrows 1 Powerhouse.

Range of Flow Releases to Yuba River (cfs)	Narrows 2 Powerhouse Release (generation)[1] (cfs)	Partial Bypass Release[1] (cfs)	Full Bypass Release[1] (cfs)	Narrows 1 Powerhouse Release[2] (cfs)
Up to 150	0	Up to 150	Typically not used	0
150 - 730	0	Typically not used	0	150 - 730
730 – 900	0	Up to 170	0	730
900 – 1,080	350	Typically not used	Used When Narrows 2 Powerhouse not available	550 - 730
1,080 - 4,130	350 - 3,400	Typically not used	Used When Narrows 2 Powerhouse not available	730
> 4,130	3,400	Typically not used	Used When Narrows 2 Powerhouse not available 0	730

1 The typical operating flow ranges of Narrows 2 facilities are limited by long-term reliability considerations, such as vibration and cavitation of the runner; and are as follows: the Narrows 2 Powerhouse between 350 and 3,400 cfs; the Partial Bypass between 0 and 230 cfs (with physical capacity to release as high as 650 cfs); and the Full Bypass between 150 and 3,000 cfs.

2 The use of the Narrows 1 Powerhouse is prioritized due to Narrows 1 Powerhouse being classified as a renewable energy source, and the economic value that accompanies the classification.

The YRDP generates an average of about 1,189 gigawatt-hours (GWh) of electricity annually, and it has an authorized installed capacity of 361.9 MW (FERC 2019). The Narrows 1 Powerhouse generated approximately 75.38 GWh of electricity in 2021 (YCWA 2023). Yuba Water schedules the energy output into the CAISO energy markets. Yuba Water uses Shell Energy North America (Shell) as its scheduling coordinator (Shell schedules the electricity of the YRDP into the CAISO's day ahead and real time markets). As previously stated, Yuba Water participates in the CAISO energy and ancillary services markets[1] for the New Colgate Powerhouse, and the energy market for Narrows 1 and Narrows 2 powerhouses. Yuba Water sells energy from the Narrows 1 Powerhouse to the Renewable Energy Credit market and sells the carbon free energy attribute from its Colgate units and Narrows 2.

[1] Ancillary services are energy products used to help maintain grid stability and reliability. Ancillary services certification is required for participating generators to bid ancillary services (CAISO 2025). Yuba Water regularly participates in the Spinning Reserve, Regulation Up, and Regulation Down ancillary services markets. Regulation energy is used to control system frequency, which must be maintained very narrowly around 60 hertz, and varies as generators change their energy output. Resources providing regulation are certified by the CAISO and must respond to automatic control signals to increase or decrease their operating levels depending upon the need. Spinning reserve is standby capacity from generation units already connected or synchronized to the grid and that can deliver their energy in 10 minutes when dispatched.

Yuba Water also sells the Resource Adequacy (RA) product into the CAISO market so entities (including municipalities, community choice aggregation organizations, direct access providers, and investment owned utilities) can meet their California Public Utility Commission (CPUC) reliability requirements[2]. All the electrical output from the YRDP is sold at the interconnect with the PG&E grid just outside of the New Colgate powerhouse. Yuba Water is not a retail electric utility; it sells its electricity wholesale on to the market, so its electricity is sent to other utilities like PG&E, which serve their own customers and manage their own transmission and distribution networks.

No transmission lines are associated with any of the developments. The New Bullards Bar minimum flow unit ties into the electric grid at the transformer next to the unit. The New Colgate Powerhouse ties into the grid at the New Colgate Switchyard adjacent to the powerhouse. Both Narrows powerhouses are connected to the power grid via the PG&E Narrows No. 1 and Narrows No. 2 Transmission Line Project, which is composed of a 1,100-foot-long, three-phase 11-kV transmission line from the Narrows 1 Powerhouse to a substation that interconnects with the electric grid.

The YRDP and Narrows Projects lie within CAISO's North of Path 15 (NP15) region. This region covers the northern part of California. Path 15 is a critical transmission corridor consisting of three 500 kilovolt (kV) lines and several 230 kV lines that facilitate the flow of electricity between Northern and Southern California. The NP15 area is used for energy trading within the CAISO market. Yuba Water's energy generation supports reliability and stability within NP15, helping to ensure NP15 can handle peak demands. The cost of energy is based on a regulated market, and is consistent across NP15, but losses and congestion across the transmission network result in varied locational marginal prices (LMP). The New Colgate Powerhouse's LMP nodes are COLGATE_1_7_B1 and COLGATE_2_7_B1. The Narrows 1 Powerhouse's LMP node is NARROWS_1_B1 and Narrows 2 Powerhouse's node is NARROWS_2_B1. These nodes are used to determine the price of electricity at these specific locations.

Upstream from the YRDP and Narrows Project, and also within NP15, NID's Yuba-Bear Project and PG&E's Upper Drum-Spaulding Project and Lower Drum Project projects also have multiple hydropower plants in the Yuba River watershed. NID's Yuba-Bear Project includes four powerhouses with a combined generation capacity of 79.32 MW. Bowman and Rollins powerhouses are operated as base-load plants, while Dutch Flat No. 2 and Chicago Park powerhouses are operated to meet intermediate loads with some peaking operations (NID 2011). PG&E's combined projects have 9 powerhouses with a combined generation capacity of 191.5 MW. Nine of the powerhouses (Spaulding No. 1, No. 2, and No. 3, Deer Creek, Alta, Halsey, Wise, Wise No. 2, and Newcastle are operated as base-loaded plants. Dutch Flat No. 1 Powerhouse is operated for intermediate amounts of peaking, and Drum No. 1 and No. 2 powerhouses are operated as peaking plants (PG&E 2011).

[2] The California Public Utilities Commission (CPUC) Resource Adequacy (RA) program requires that Load Serving Entities (LSE) procure of 90% of their System Resource Adequacy obligation by the end of October each year for the five summer of the of the coming year. The System RA is their California Energy Commission (CEC)-adjusted forecast plus a planning reserve margin of 17%. Each month, the LSE's must procure 100% of their monthly System RA obligation.

The increase in renewable energy, particularly solar generation, over recent years has had a dramatic effect on California's energy markets. Figure 7.2-1 shows monthly solar generation in California since 2018 (CAISO 2024a).

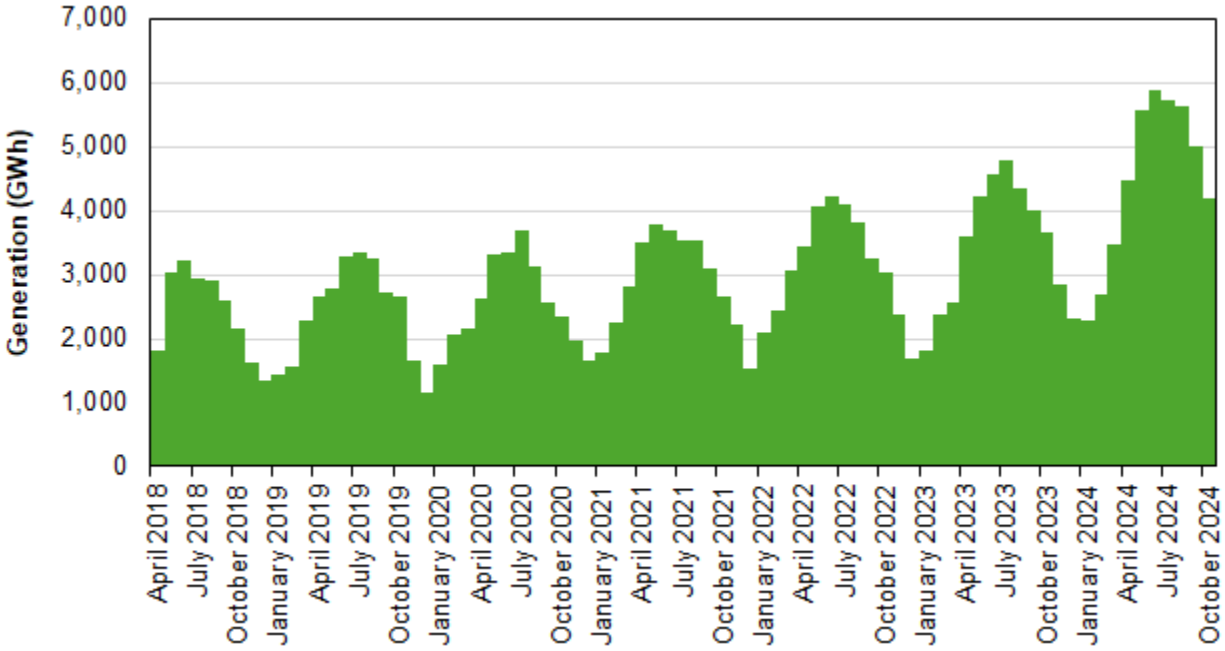

Figure 7.2-1. Comparison of Historical Monthly California Solar Generation.
Source: CAISO 2024

The increase in solar generation has led to an increase in over-generation within the CAISO areas. CAISO often relies on exports to neighboring balancing areas, such as those in the Pacific Northwest, Desert Southwest, and Baja California, to mitigate for over-generation periods; exports allow the system to maintain balance without resorting to curtailments. Over-generation typically occurs when there is an excess of renewable output, particularly midday solar, and low system demand (CAISO 2024c). This typically occurs during the spring, particularly during mild weather. The increase in solar generation coincides with an increase in exports. Figure 7.2-2 shows a comparison of historical monthly California energy exports.

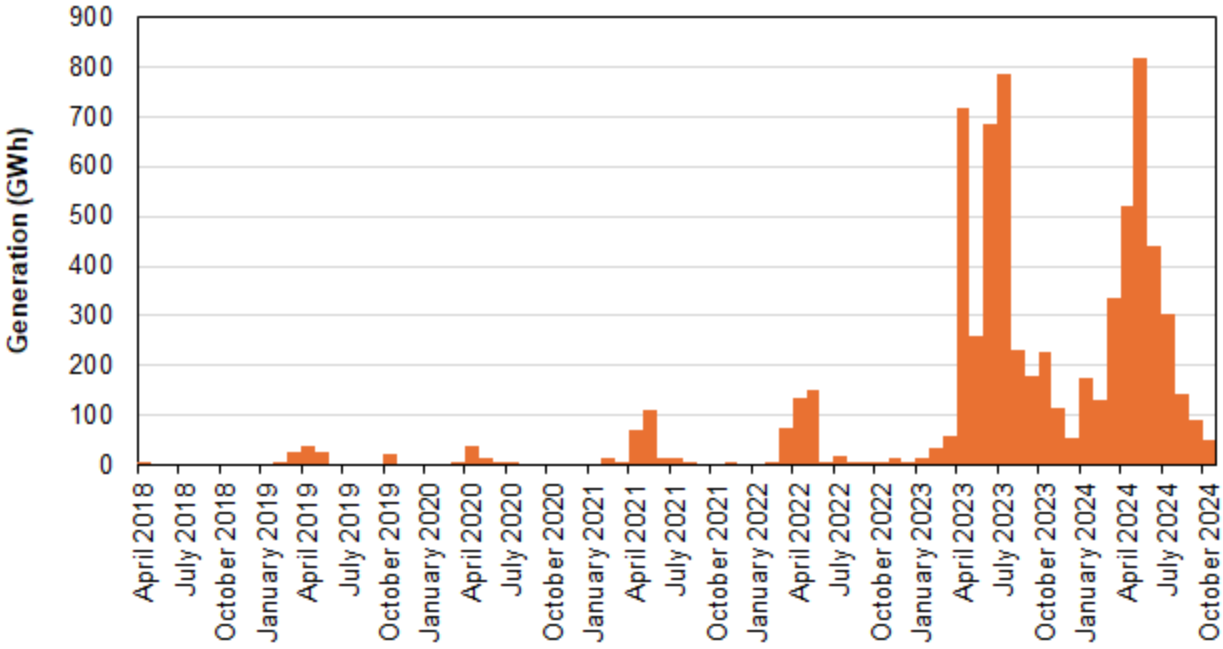

Figure 7.2-2. Comparison of Historical Monthly California Energy Exports.
Source: CAISO 2024

CAISO defines net demand as total electricity demand minus generation from wind and solar resources; California's increase in over-generation occurs in the middle of the day, when available solar generation exceeds the demand, resulting in a negative net generation. However, solar generation is reduced as the sun goes down in the evening, corresponding with the time of the day with the highest demand, resulting in a need for large quantities of replacement energy to come online quickly in the evening, this sudden increase in demand for generation is referred to as the "evening ramp". Figure 7.2-3 shows the comparison of historical hourly demand, net demand, and solar generation for May 11, 2024. Note that the evening ramp requires nearly 25 GW of additional generation resources to be dispatched between 16:00 and 20:00 in the evening.

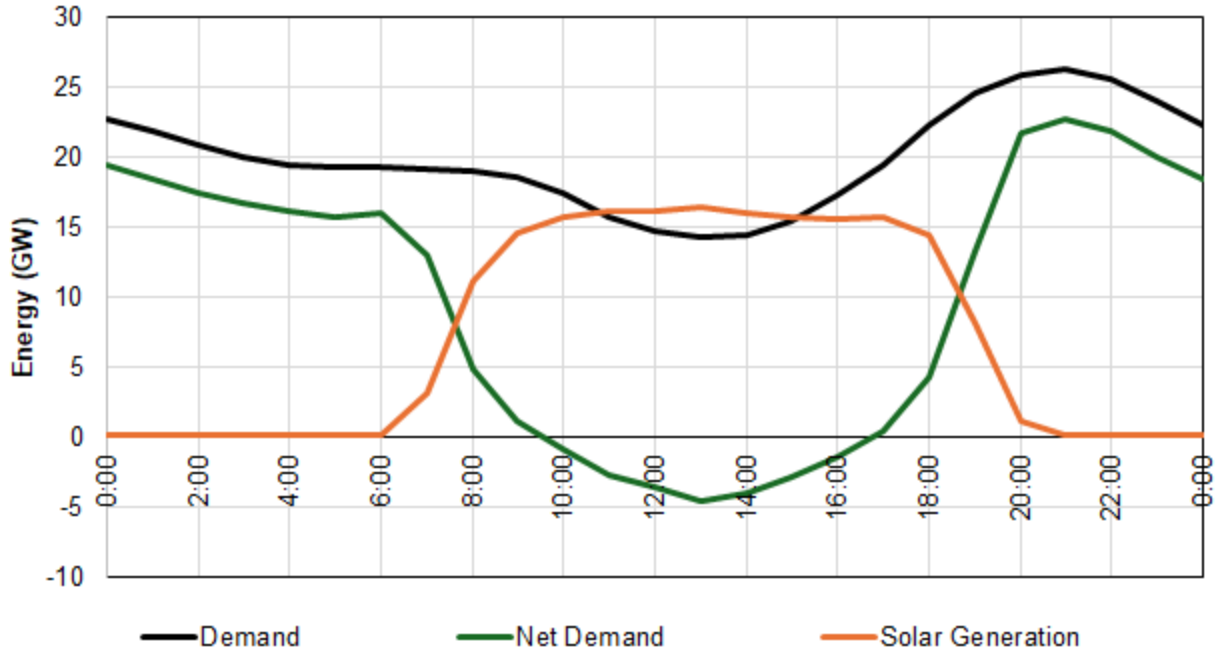

Figure 7.2-3. Comparison of Historical Hourly Demand, Net Demand, and Solar Generation for May 11, 2024.
Source: CAISO 2024b

The New Colgate Powerhouse provides a flexible generation resource that helps the CAISO respond to the evening ramp by providing a flexible generation resource. Additionally, there have been multiple periods recently when the CAISO called on generators to increase their output and warned California residents about the possibility of rolling blackouts. For example, in September 2022, amidst a severe heat wave in California, the CAISO issued a Flex Alert urging voluntary energy conservation, and, at the peak of the heatwave, the CAISO declared an Energy Emergency Alert, signaling all resources were committed or forecasted to be use, and that energy deficiencies were expected. On September 6, 2022, California reached its historical peak energy demand of 52,061 megawatts, but with CAISO's response measures, system operations remained reliable, and no outages were needed. CAISO was able to maintain reliability during the emergency through its Resource Adequacy program and with coordination and communication with California utilities, including Yuba Water; Yuba Water received authorization and a request from CAISO (CAISO 2022) on September 1 to provide additional generation between 16:00 and 21:00 for the week of September 2 through 7, 2022, to help maintain grid reliability through the heat wave. Yuba Water increased both New Colgate and the Narrows 2 Powerhouses' output during this emergency, compared to planned releases. Figure 7.2-4 shows generation from the New Colgate, Narrows 1, and Narrows 2 powerhouses immediately before, during, and after the emergency period.

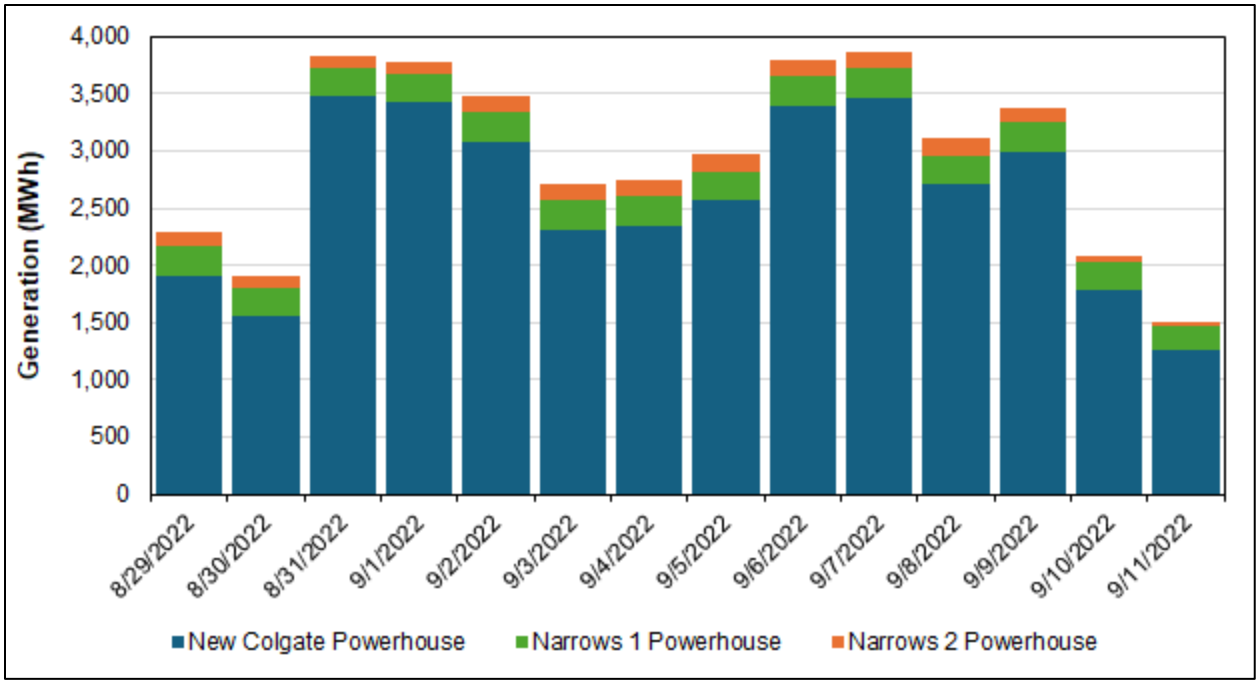

Figure 7.2-4. Historical Daily Yuba Water Generation During September 2 through 7, 2022 Heat Wave.

A trend that is becoming more pronounced is the need for generation in the morning ramp hours (hours 06:00 to 08:00 depending on the time of year). At times, the morning ramp hours do not have sufficient solar, wind or batteries to provide to the grid. In addition, when electricity demand increases in the morning ramp hours in the CAISO real time market and the response time to provide generation is not long enough for natural gas generation (i.e., natural gas generation can take hours to be ready to provide electricity on the grid) the hydroelectricity from Yuba Water provides necessary generation to the grid.

7.2.2 Energy Consumption

Hydropower is a major energy source in California. In WY 2024 (October 1, 2023, through September 30, 2024), the most recent year for which data are available, California consumed approximately 212,259 GWh of electricity. Figure 7.2-5 shows a comparison of various sources of generation for 2024 (CAISO 2024).

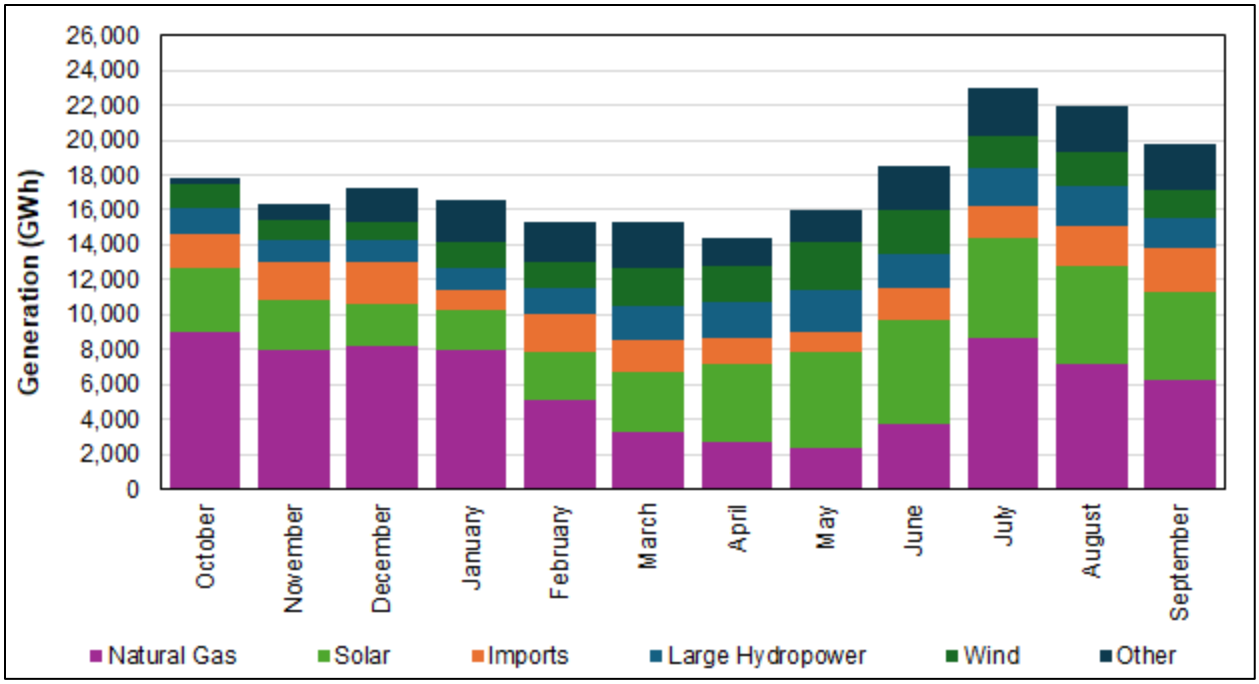

Figure 7.2-5. Comparison of California Generation Sources for WY 2024.
Source: CAISO 2024

In WY 2024, natural gas made up 34% of the total generation, solar generation accounted for 23%, imports from out of state accounted for 11%, wind and large hydropower (from hydropower plants larger than 30 MW) accounted for 10%, and other sources, including batteries, nuclear, and small hydropower (hydropower facilities with less than 30 MW capacity) accounted for 12%.

The three-county area within which the Proposed Projects are located receives electrical service from PG&E, an investor-owned utility serving most of northern and central California. In 2022, the most recent year for which data are available, the total electricity consumption for Yuba County was approximately 572 million kWh, of which approximately 258 million kWh were consumed by residential uses and the remainder by non-residential uses. For Nevada County, total electricity consumption in 2022 was approximately 697 million kWh, of which approximately 437 million kWh were consumed by residential uses. Sierra County consumed approximately 23 million kWh of electricity in 2022, of which approximately 14 million kWh were consumed by residential uses (CEC 2022a).

Natural gas is also a significant source of energy that is consumed by residences and businesses. Aside from electricity generation, natural gas is also used for heating and cooking. PG&E is the sole provider of natural gas services in Yuba and Nevada Counties. In 2022, Yuba County consumed approximately 11 million therms of natural gas, of which approximately 7.5 million therms were consumed by residential uses and the remainder by non-residential uses. For Nevada County, total natural gas consumption in 2022 was approximately 23 million therms, of which approximately 16 million therms were consumed by residential uses and the remainder by non-residential uses (CEC 2022b). No natural gas service is provided in Sierra County; instead, propane is commonly used, provided through private companies and stored in individual tanks.

7.3 Regulatory Setting

7.3.1 Federal

7.3.1.1 Federal Power Act

In 1920, Congress passed the Federal Water Power Act, which gave the Federal Power Commission (FPC), the Federal Energy Regulatory Commission's (FERC) predecessor, its original authority to license and regulate non-federal hydropower projects. As Congress expanded the regulatory authority of the FPC, the Federal Water Power Act ultimately became Part I of the Federal Power Act (FPA). Part I of the FPA has been amended by subsequent statutes including the Electric Consumers Protection Act of 1986, the Energy Policy Act of 1992, the Hydropower Regulatory Efficiency Act of 2013, and the America's Water Infrastructure Act of 2018.

FERC relies on these authorities to carry out its hydropower responsibilities, including: the issuance of preliminary permits; determinations regarding qualifying conduit facilities; the issuance of licenses for the construction and operation of new projects; the issuance of relicenses for existing projects; the investigation and assessment of headwater benefits; and the oversight of all ongoing project operations, including dam safety and security inspections, public safety, and environmental monitoring. While FERC's responsibility under the FPA is to strike an appropriate balance among the many competing developmental and non-developmental interests, including environmental, several other statutes affect hydropower regulation. These include, but are not limited to, NEPA, the Clean Water Act, the Coastal Zone Management Act, the Endangered Species Act, the Fish and Wildlife Coordination Act, and the National Historic Preservation Act.

7.3.1.2 North American Electric Reliability Corporation (NERC)

The North American Electric Reliability Corporation (NERC) has several requirements for hydropower generators to ensure the reliability and stability of the bulk power system. Key requirements include:

- Generator Operation for Maintaining Network Voltage Schedules (VAR-002-4.1): Hydropower generators must operate in automatic voltage control mode with their automatic voltage regulator (AVR) in service and controlling voltage, unless instructed otherwise by the Transmission Operator.

- Modeling and Data Requirements: Hydropower generators must develop, validate, and submit models of their generators, governors, exciters, and turbines. These models must be updated every five years or when equipment is modified.

- Reactive Power and Voltage Control: Generators must maintain the voltage or reactive power schedule provided by the Transmission Operator, within the capabilities of the generating facility.

- Disturbance Monitoring and Reporting: Generators must monitor and report disturbances to ensure accurate simulation of the dynamic response of the generator under various conditions.

These requirements help maintain grid stability and ensure that hydropower generators contribute effectively to the overall reliability of the power system.

7.3.1.3 Western Electricity Coordinating Council

The Western Electricity Coordinating Council (WECC) has specific requirements for hydropower generators to ensure reliability and stability of the power system in the Western Interconnection. Requirements include:

- Generating Facility Data Requirements: Hydropower generators must provide detailed data about their facilities, including generator models, governor models, exciter models, and turbine models. This data is crucial for transmission planning and system reliability.

- Model Validation and Testing: Generators must validate and test their models to ensure they accurately represent the dynamic behavior of the generating units. This includes baseline tests and periodic validation to maintain model accuracy.

- Over Excitation System Limiter (OEL) and Over Excitation Protection (OEP) Testing: Generators must perform tests to ensure their excitation systems are properly limited and protected.

- Coordination with NERC Requirements: WECC requirements often align with NERC standards, including the development, validation, and submission of generator models for facilities 20 MVA and larger.

As with the NERC requirements, the WECC requirements help maintain grid stability and ensure that hydropower generators contribute effectively to the overall reliability of the power system.

7.3.1.4 Institute of Electrical and Electronics Engineers

The Institute of Electrical and Electronics Engineers (IEEE) provides standards for the design, O&M of hydropower facilities. These include guidelines for electrical equipment, safety protocols, and performance testing. IEEE standards for hydropower cover a wide range of topics to ensure the safe, efficient, and reliable operation of hydroelectric power plants. Here are some key standards:

- IEEE 125-2007: Recommended Practice for Preparation of Equipment Specifications for Speed-Governing of Hydraulic Turbines Intended to Drive Electric Generators. This standard provides guidelines for specifying speed-governing systems.

- IEEE 492-1999 (R2011): Guide for Operation and Maintenance of Hydro-Generators. It offers best practices for the O&M of hydro-generators.

- IEEE 666-2007: Design Guide for Electric Power Service Systems for Generating Stations. This guide covers the design of electric power service systems in hydroelectric plants.

- IEEE 1010-2006: Guide for Control of Hydroelectric Power Plants. It documents industry practices for control system logic, configurations, and control modes in hydroelectric plants.

- IEEE 1248-2020: Guide for the Commissioning of Electrical Systems in Hydroelectric Power Plants. This guide provides procedures for the inspection and testing of electrical systems from installation to commercial operation.

- IEEE 1249-2013: Guide for Computer-Based Control for Hydroelectric Power Plant Automation. It addresses the application and design of computer-based control systems for automation.

These standards help ensure that hydroelectric power plants operate safely, efficiently, and reliably.

7.3.2 State

7.3.2.1 California Green Building Standards Code

The California Green Building Standards Code, or CALGreen, is published in its entirety every three years by order of the State Legislature. The latest version was published in 2022. The 2025 version is currently in the publication and market readiness activities stage, and this version is scheduled to take effect on January 1, 2026.

CALGreen features regulations for energy efficiency, water efficiency and conservation, material conservation and resource efficiency, environmental quality, and other matters. It also includes mandatory measures for residential and non-residential buildings, along with appendices containing voluntary measures for residential and non-residential uses. Yuba, Nevada, and Sierra Counties all have adopted the 2022 CALGreen.

7.3.2.2 California Energy Code

The California Energy Code (California Code of Regulations Title 24, Part 6), with its building energy efficiency standards, is designed to reduce wasteful, uneconomical, and unnecessary consumption of energy. The Energy Code is updated every three years, with the most recent update in 2022. Yuba, Nevada, and Sierra Counties all have adopted the 2022 California Energy Code.

The Energy Code contains energy and water efficiency requirements, along with indoor air quality requirements, for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The Energy Code is conceptually divided into three basic sets. First is a basic set of mandatory requirements that apply to all buildings. Second is a set of performance standards – the energy budgets – that vary by climate zone (of which there are 16 in California) and building type; thus, the Energy Code is tailored to local conditions and provide flexibility in how energy efficiency in buildings can be achieved. The third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that provide a recipe or a checklist compliance approach.

7.3.2.3 Renewables Portfolio Standard

California's Renewables Portfolio Standard program, originally established in 2002 by SB 1078, encourages greater provision of electricity from renewable resources. “Renewable resources” include solar, wind, geothermal, biomass, and small hydroelectric, the latter generating up to 30 MW, or 40 MW if operated as part of a water supply or conveyance system. The New Bullards Bar Minimum Flow and Narrows 1 Powerhouses are considered small hydroelectric facilities as defined by the Renewables Portfolio Standard.

Initially, SB 1078 required that 20% of electricity retail sales in California must be generated by renewable resources by 2017. Subsequent renewables targets included 33% by 2020 and 50% by 2030. Most recently, SB 100, enacted in 2018, increased the renewables target in 2030 to 60% and requires all the state's electricity to come from carbon-free resources by 2045. In 2020, California received 34.5% of its retail electricity from renewable resources, thereby meeting the 2020 target. As of 2022, 39.4% of California’s retail electricity came from renewable resources (CEC 2024).

7.3.2.4 Resource Adequacy Program

The CPUC adopted a Resource Adequacy policy in 2004 to ensure the reliability of electric service in California. The CPUC established Resource Adequacy obligations applicable to all Load Serving Entities (LSEs) within the CPUC’s jurisdiction, including investor-owned utilities (IOUs), energy service providers (ESPs), and community choice aggregators (CCAs). The CPUC’s Resource Adequacy policy framework – implemented as the Resource Adequacy program - guides resource procurement and promotes infrastructure investment by requiring that LSEs procure capacity so that capacity is available to the CAISO when and where needed. On June 20, 2024, the CPUC released Decision (D.) 24-06-004 that resolves issues scoped in Track 1 of the Resource Adequacy (RA) Proceeding, Rulemaking (R.) 23-10-011. Specifically, the Decision affirms the Commission’s decision to implement the Slice of Day (SOD) Framework for the 2025 RA compliance year, as summarized below.[3] Additionally, it sets the near-term reliability requirements for CPUC’s jurisdictional Load Serving Entities’ (LSE) obligations to procure System, Local, and Flexible RA capacity. The Decision adopts Local Capacity Requirements (LCR) for 2025 through 2027, Flexible Capacity Requirements (FCR) for 2025, and sets a 17 percent Planning Reserve Margin (PRM) for LSEs under the SOD Framework. The Decision also makes rule clarifications and refinements to the RA program.

Under the SOD framework, each LSE will procure their load share of system capacity for each of the 24 hours of the day. As the system experiences more variable renewable energy and storage, and as the periods of system scarcity or stress conditions emerge outside of the system peak hours, it is increasingly important for all LSEs to procure reliability capacity to meet the periods of system stress and not just ‘peak’ load.

[3] The CPUC requires all LSEs to maintain adequate generating capacity to meet each LSE’s local, system, and flexible demands. To meet local requirements, LSEs must procure resources sited in locations where supply is needed due to insufficient transmission. For system requirements, LSEs must contract for or generate sufficient resources to meet their share of the system’s peak demand, plus a PRM. To meet flexible requirements, LSEs must procure resources that can ramp up or down on short notice to meet variations in demand and production.

Local RA requirements are set annually to ensure that transmission constrained local areas have sufficient resources to serve load based on a 1-in-10 weather year[4] and N-1-1[5] contingency criteria. Flexible requirements were developed in response to the increased penetration of variable resources on the system and the need to ensure there would be enough flexible capacity to meet energy demands when variable energy resources stop producing. Flexible RA requirements are set based on an annual CAISO study that looks at the largest three-hour ramp for each month needed to run the system reliably (CPUC 2024).

7.3.3 Regional/Local

7.3.3.1 Yuba Water's Water Rights for Power

Yuba Water holds pre-1914 appropriative rights dating from 1897 and post-1914 appropriative water rights reflected and confirmed by water-right licenses, for the purposes of operating the YRDP for hydroelectric power generation. Table 7.3-1 lists the post-1914 appropriative water-right licenses held by Yuba Water for power generation.

Table 7.3-1. Water-right licenses held by Yuba Water for operation of the Project for power generation.

Priority (date)	SWRCB Designation (application)	SWRCB Designation (license)	Source (waterbody)	Amount & Place of Diversion or Storage (amount & place)		Season (period)		Place of Beneficial Use (powerhouse)
2/11/1921	2197	435	North Yuba River	700 cfs at NBB Dam		1/1 - 12/31		New Colgate Powerhouse
				5,000 ac-ft/yr at NBB Dam		about 12/15 to about 7/15		
9/7/1922	3026	436	North Yuba River	10,000 ac-ft/yr at NBB Dam		about 12/15 to about 7/15		New Colgate Powerhouse
4/30/1926	5004	777	North Yuba River	15,000 ac-ft/yr at NBB Dam		about 12/15 to about 7/15		New Colgate Powerhouse
Priority (date)	SWRCB Designation (application)	SWRCB Designation (license)	Source (waterbody)	Amount & Place of Diversion or Storage (amount & place)		Season (period)		Place of Beneficial Use (powerhouse)
7/30/1927	5631	11565	Middle Yuba River	810 cfs at Our House Dam	490,000 ac-ft/yr storage in NBB Res	1/1-12/31 (dir. div.)	10/15 to 6/30 (stor.)	New Colgate Powerhouse and Narrows 2 Powerhouse
			Oregon Creek	240 cfs at Log Cabin Dam		1/1-12/31 (dir. div.)		
			North Yuba River	1,800 cfs at NBB Dam		11/1- 7/31 (dir. div.)		
			Yuba River	1,800 cfs at USACE's Englebright Dam		1/1- 12/31		
3/1/1939	9516	3050	North Yuba River	100 cfs at NBB Dam		1/1 - 12/31		New Colgate Powerhouse
9/12/1941	10282	5544	North Yuba River	5,335 ac-ft/yr at NBB Dam		about 10/1 to about 3/1		New Colgate Powerhouse
								Narrows 2 Powerhouse

[4] The CPUC 1-in-10 weather year refers to a weather scenario that is expected to occur with a 10% probability in a given year. In this context, it means higher-than-average temperatures that lead to increased electricity demand, especially during peak hours. This scenario ensures the electric grid can handle unusually high demand due to rare but foreseeable weather events.

[5] The N-1-1 contingency planning standard means the system can withstand two consecutive failures where after the first failure occurs, the system adjusts, and then a second, different failure occurs, and the system must remain stable and avoid cascading outages. The standard is important for ensuring high reliability in the electric grid during extreme weather events or high-demand periods.

Table 7.3-1. (Continued).

Priority (date)	SWRCB Designation (application)	SWRCB Designation(license)	Source (waterbody)	Amount & Place of Diversion or Storage (amount & place)		Season (period)	Place of Beneficial Use (powerhouse)
2/20/1953	15205	11566	Middle Yuba River	3,200 ac-ft/yr at Log Cabin Dam; storage in NBB Res.		5/1- 6/30	New Colgate Powerhouse and Narrows 2 Powerhouse
			North Yuba River	245 cfs and 700 ac-ft/yr at NBB Dam		3/15- 6/15 (dir. div.); 5/1- 6/30 (stor.)	
			Yuba River	800 cfs at USACE's Englebright Dam		11/1-7/15	
10/2/1953	15563	11567	Middle Yuba River	30,000 ac-ft/yr at Our House Dam	all storage in NBB Res.	10/15 - 6/30	New Colgate Powerhouse and Narrows 2 Powerhouse
			Oregon Creek	1,400 ac-ft/yr at Log Cabin Dam		10/15 - 6/30	
			North Yuba River	146,000 ac-ft/yr at NBB Dam		10/15 - 6/30	
			Yuba River	910 cfs at USACE's Englebright Dam		11/1 - 6/30	

7.4 Impact Assessment Methodology

The impact analysis for energy follows the approach in the general overview described in Chapter 4. Due to the interconnected nature of California's energy market, changes in generation from the YRDP and Narrows Projects have the potential to affect the NP15 region; the primary study area for Power Production and Energy Consumption is the NP15 region. There is no secondary study area for Power Production and Energy Consumption.

7.4.1 Power Production Effects

7.4.1.1 Construction

None of the construction-related projects associated with the Proposed Projects or the alternatives would affect New Bullards Bar Reservoir's ability to make releases through the New Colgate Powerhouse; if constructed, the Tailwater Depression System (TDS) would be constructed during a planned New Colgate Powerhouse outage, nor would any projects affect releases through the Narrows 1 or Narrows 2 powerhouses. Accordingly, there would be no construction-related impacts from the Proposed Projects or their alternatives energy generation. Because of this, construction impacts associated with energy generation are not further analyzed in this chapter.

7.4.1.2 Operations

The operations analysis evaluates impacts related to hydrologic changes from the Proposed Projects and alternatives including changes in generation from the New Colgate, Narrows 1, Narrows 2, and New Bullards Bar Minimum Flow powerhouses.

Potential generation impacts are assessed based on evaluation of model results from Yuba Water's Yuba River Development Project Model (YRDPM). The YRDPM includes representation of a long-term period of record of hydrology (WY 1970 through 2021), current and proposed facilities, and current and proposed operational requirements. Changes in simulated generation as a result of the Proposed Projects and alternatives, relative to the bases of comparison, are used to determine

potential impacts. More information about the YRDPM, including assumptions, inputs, and model limitations, is available in Appendix 5-1, Yuba Water Operations Model Technical Memorandum. Changes in simulated monthly generation as a result of each alternative's assumptions will be compared to the appropriate basis of comparison to determine changes in generation resulting from each alternative.

While the YRDPM provides the majority of the information used for the impact assessment, Yuba Water also relied on its New Colgate Generation Optimization Model (Colgate Optimization Model), documented in Appendix 7A. The Colgate Optimization Model computed hourly operations of the New Colgate Powerhouse using the daily YRDPM output and historical (water year 2024) energy and ancillary services prices. The Colgate Optimization Model optimized hourly operations to maximize energy-related revenue of the New Colgate Powerhouse. Outputs include hourly flow and generation, and generation capacity. The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 1 and Narrows 2 powerhouses' capacities are based on releases. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from either the Narrows 1 or 2 powerhouses would reduce the amount of RA the YRDP can provide. As a result of Yuba Water's participation in the Resource Adequacy program, the generation capacity will be used to evaluate changes in potential for providing resource adequacy to the CAISO grid.

Alternative 1 also includes the requirement that NID and PG&E release an additional 15,600 acre-feet of water in April and May of dry and critical years to offset increased YRDP and Narrows Project releases for water temperature management in September and October. Because the actual relative contribution of flow from NID and PG&E has not been defined, nor which reservoirs or powerhouses would be used to make the releases, this impact analysis utilizes information from NID (NID 2023) regarding changes in average annual generation in dry and critically dry years between NID's Scenario 2, All FEIS and NID's Alternative 1, YCWA Proposal, to characterize potential changes to NID and PG&E generation that could occur under Alternative 1 at a programmatic level.

Table 7.4-1 shows the appropriate basis of comparison for each alternative. A comprehensive description of each alternative and the intent of each comparison is described in Chapter 3.

Table 7.4-1. Summary of Scenario Comparisons

Alternative Scenario Number	Alternative Scenario Name	Basis of Comparison Number	Basis of Comparison Name
3	No Project	1	Existing Condition
4	Proposed Projects	1	Existing Condition
5	Proposed Projects (Future)	2	Future Baseline
6	Alternative 1	1	Existing Condition
6	Alternative 1	2	Future Baseline
9	Alternative 2	1	Existing Condition
9	Alternative 2	2	Future Baseline
7	Proposed Projects Cumulative Condition	1	Existing Condition
8	Alternative 1 Cumulative Condition	1	Existing Condition
10	Alternative 2 Cumulative Condition	1	Existing Condition

While the No Project Alternative is functionally equivalent to the Existing Condition from a flow perspective, it assumes a complete loss of YRDP and Narrows Project generation.

7.4.2 Energy Effects

CEQA requires that an EIR include a discussion of the potential energy impacts of a project, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (California Public Resources Code Section 21100(b)(3)). CEQA Guidelines Appendix F explains that potentially significant energy implications of a project shall be considered in an EIR to the extent relevant and applicable to the project. The EIR should discuss energy conservation issues and the energy requirements of the project, along with energy-consuming equipment and processes to be used during project construction and operations, including energy consumed by vehicle trips. As explained in Appendix F, the means of achieving the goal of conserving energy include: (i) decreasing overall per capita energy consumption; (ii) decreasing reliance on fossil fuels such as coal, natural gas and oil, and (iii) increasing reliance on renewable energy sources. Appendix F further notes that potentially significant energy implications of a project shall be considered in an EIR to the extent relevant and applicable to the project and includes the following list of energy impact possibilities:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, O&M and/or removal. If appropriate, the energy intensiveness of materials may be discussed.

2. The effects of the project on local and regional energy supplies and on requirements for additional capacity.

3. The effects of the project on peak and base period demands for electricity and other forms of energy.

4. The degree to which the project complies with existing energy standards.

5. The effects of the project on energy resources.

6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

Appendix F explains that in many instances specific items may not apply or additional items may be needed, but where items listed are applicable or relevant to the project, they should be considered in the EIR. A desktop analysis was completed to collect and analyze data related to energy use by the Proposed Projects. For construction activities, the analysis will focus on the use of fossil fuels, electricity, and other sources by construction equipment and vehicles. For operations, the analysis will evaluate potential energy use by structures associated with the Proposed Projects and the effect of the Proposed Projects and Alternatives on energy supplies.

7.4.3 Impact Indicators and Significance Criteria

7.4.3.1 Power Production

Reoperation of the YRDP under the Proposed Projects or the alternatives may result in reduced generation in some years due to changes in flows through the powerhouses or head in the upstream reservoirs as a result of operations for each scenario. A reduction in combined generation from the

four power plants, relative to the appropriate basis of comparison, as a result of each alternatives' operations, at a frequency and magnitude that could disrupt CAISO grid stability, would be considered significant (CAISO 2021).

The flexible nature of operations of the New Colgate Powerhouse allows it to avoid generation during low-demand hours (e.g., when solar and batteries operate), and to provide generation during high-demand hours (e.g., hours when there is less generation available on the CAISO grid, which is usually met by dispatchable generation like natural gas or some hydroelectricity units like the ones operated by the Yuba Water Agency). While modeling for the YRDP and Narrows Project relicensing uses daily timestep, a reduction in YRDP and Narrows Project generation of approximately 10% to 15% would start to impinge on Yuba Water's ability to provide energy during high-demand hours. A 10% reduction in generation would represent a loss of generation to roughly 1,400 homes. Accordingly, a threshold of 10% reduction in daily average generation is used to represent a significant threshold. While the Minimum Flow Powerhouse provides additional generation, its maximum capacity is a small fraction of the New Colgate and Narrows 2 Powerhouse, and while its generation is included in the accumulated quantities of generation, its role is minimal and is generally not mentioned in discussions of impacts of the Proposed Projects and alternatives.

Since it can be operated flexibly through the day, the New Colgate Powerhouse's capacity to provide RA services is based on the powerhouse's capacity to generate, which is primarily a factor of the amount of water stored in New Bullards Bar Reservoir. The Narrows 1 and 2 powerhouses do not vary flows through the day, so their capacity to provide RA services is based on planned releases. A reduction in YRDP and Narrows Project ability to provide RA services would require LSEs to procure other local RA assets, but most regional generators already participate in the RA market, so replacing Yuba Water's RA would be challenging. CAISO requires a 17% PRM as a standard for ensuring grid reliability. This margin is intended to provide a buffer to account for unexpected events such as generator outages or extreme weather. A reduction in local generation that approaches or exceeds this margin could compromise reliability. Therefore, a reduction in YRDP and Narrows Project capacity of 15% could be potentially significant.

The Narrows Project is qualified as a renewable energy source under the Renewables Portfolio Standard. As a result, Yuba Water preferentially runs the Narrows 1 Powerhouse over the YRDP's Narrows 2 Powerhouse. However, if the Proposed Projects or an alternative resulted in a reduction in generation from the Narrows 1 Powerhouse, it would represent a reduction in renewable energy on the CAISO grid. While there is excess renewable generation available during the spring, reductions in renewable energy generation during the summer could interfere with the State's SB 100 renewable energy objectives. Accordingly, an average monthly reduction of greater than 1% between July and October could be potentially significant.

Generation revenue from the YRDP and Narrows Project is used to fund the O&M of Yuba Water's facilities generally, as well as many of Yuba Water's programs. These programs include supporting Yuba County's disadvantaged communities and fisheries and aquatic habitat enhancement projects on the lower Yuba River. Generation revenue varies greatly from year to year, so Yuba Water's ability to fund these programs, as well as its fundamental O&M costs, depends on long-term, predictable revenue. Yuba Water's Amended License Application (AFLA) for the YRDP estimated average annual gross power benefits of approximately $51,000,000, and

average annual costs of approximately $32,000,000, and a net annual benefit of around $19,000,000 using 2016 energy value for the Existing Condition scenario (Yuba Water 2017). Based on these benefits and costs, a 10% reduction in YRDP generation value, or approximately $5,000,000, would be more than a quarter of the net benefit of the Existing Condition. Accordingly, a reduction in average annual generation-related revenue greater than 10% would result in a significant reduction in Yuba Water's ability to fund its programs over the long term.

Operations for Alternative 1 could lead to changes in timing and magnitude of generation by NID and PG&E. Power generation in April and May could be increased if the Alternative 1 releases were made from the Bowman and Spaulding No. 2 powerhouses, or if releases came from NID's Milton Diversion Dam, there would be no additional generation. Depending on whether NID and PG&E elected to make the releases from reservoir storage or by reducing out-of-basin diversions through the Drum and South Yuba tunnels, there could be reductions in generation within their respective systems, likely at different times of the year. For base-loaded plants, any increase or decrease in generation would be spread throughout the day, but a decrease in generation from a peaking plant would likely reduce the runtime of the plant rather than the peak output. The maximum potential effect would result from forgoing generation from the full 15,600 acre-feet of release throughout a chain of cascading hydropower plants in April or May.

Accordingly, for energy supplies, the Proposed Projects or the alternatives would have a significant impact, relative to the appropriate basis of comparison, if they would:

- **Impact EN-1:** Result in an average monthly decrease in total combined generation from New Colgate, Minimum Fish Flow, and Narrows 2 powerhouses of greater than 10%.

- **Impact EN-2:** Result in an average monthly decrease in total combined generation capacity from New Colgate and Narrows 2 powerhouses of greater than 15%.

- **Impact EN-3** Result in an average monthly decrease in total generation from the Narrows 1 Powerhouse of greater than 1%.

- **Impact EN-4:** Result in an average monthly decrease in generation capacity from Narrows 1 Powerhouse of greater than 15%.

- **Impact EN-5:** Result in decrease in an average annual generation-related revenue from the YRDP greater than 10%

- **Impact EN-6**: Result in decrease in an average annual generation-related revenue from the Narrows Project greater than 10%

Alternative 1 has the ability to affect NID and PG&E's Yuba-Bear and Drum-Spaulding projects' hydropower generation. An impact to NID and PG&E's hydropower generation would occur if there was a substantial reduction in generation relative to the Future Baseline.

7.4.3.2 Energy Consumption

For energy consumption, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, the Proposed Projects and alternatives may have a significant impact on energy if they would:

- **Impact EN-7:** Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during YRDP construction.
- **Impact EN-8:** Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during YRDP operations.
- **Impact EN-9:** Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Narrows Project operation.
- **Impact EN-10:** Conflict with or obstruct a state or local plan for renewable energy or energy efficiency as a result of YRDP construction activities.
- **Impact EN-11**: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency as a result of YRDP operations.
- **Impact EN-12:** Conflict with or obstruct a state or local plan for renewable energy or energy efficiency as a result of Narrows Project operations,

Energy consumption impacts of the Proposed Projects and the alternatives are evaluated relative to the Existing Condition, rather than the Future Baseline. This is because these impacts involve construction or operational activities that are not affected by flows, or because it is not feasible or necessary to precisely distinguish between the magnitudes of these impacts based on quantitative differences in flows.

7.5 Environmental Impact Analysis

7.5.1 Proposed Projects compared to the Existing Condition

7.5.1.1 Energy Production

YRDP Impact EN-PP-1: Change in Monthly Generation from YRDP Operations

Operations for the YRDP include increased flow requirements in the Middle Yuba River below Our House Dam, increased flow requirements in Oregon Creek below Log Cabin Dam, increased flows in the North Yuba River below New Bullards Bar Dam, and periodic closures of the Lohman Ridge Tunnel. These elements of the Proposed Projects would each contribute to a reduction in flows from the New Colgate Powerhouse and a reduction in generation. Since flows in the lower Yuba River are not changing substantially, there would not be substantial changes in generation at the Narrows 2 Powerhouse. Table 7.5-1 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse, and Minimum Flow Powerhouse.

Table 7.5-1. Comparison of Average Monthly Generation for YRDP Facilities Relative to Existing Condition.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Existing Condition	Proposed Projects	(GWh)	(%)
October	51.8	51.4	-0.5	-1%
November	49.5	47.2	-2.3	-5%
December	64.0	60.2	-3.8	-6%
January	84.5	79.5	-5.0	-6%
February	96.6	92.1	-4.5	-5%
March	151.7	148.2	-3.5	-2%
April	132.6	130.8	-1.8	-1%
May	174.3	165.7	-8.6	-5%
June	176.9	166.8	-10.1	-6%
July	155.5	149.6	-5.9	-4%
August	134.9	127.9	-7.0	-5%
September	63.7	61.2	-2.5	-4%

Key: MW = Megawatt

While there is a reduction in average YRDP generation in most months under the Proposed Projects relative to the Existing Conditions, average generation reductions reach their maximum of 6% in December, January, and June. Other months have smaller reductions; as such, average monthly decreases would not be greater than 10%. Accordingly, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact EN-PP-2: Change in Monthly Generation Capacity from YRDP Operations

The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its planned flows. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse would reduce the amount of RA the YRDP can provide. Table 7.5-2 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses relative to the Existing Condition.

Table 7.5-2. Comparison of Average Monthly Generation Capacity for New Colgate and Narrows 2 Powerhouses Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	Proposed Projects	(MW)	(%)
October	299	300	0	0%
November	289	289	0	0%
December	282	282	0	0%
January	280	279	-1	0%
February	285	284	0	0%
March	315	315	0	0%
April	339	339	1	0%
May	358	358	0	0%
June	359	358	-1	0%
July	340	340	-1	0%
August	326	325	-1	0%
September	307	307	0	0%

Key: MW = Megawatt

There is a very small decrease in generation capacity in January, June, July, and August; otherwise, no capacity changes would occur, with even a slight increase in April. Under the Proposed Projects relative to the Existing Conditions, average generation capacity reductions do not even amount to 1% of the Existing Condition capacity. Accordingly, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact EN-PP-3: Reduction in Generation-Related Revenue from YRDP Operations

While the New Colgate Powerhouse's flexible operations allow it to target hours of high energy demand and the associated higher economic value, the Narrows 2 Powerhouse runs consistently through every hour of a day. The New Colgate Powerhouse's operational flexibility allows it to adjust generation to minimize the economic effects of reductions in generation shown in Table 7.5-1. Table 7.5-3 shows a comparison of the average annual generation revenue for the YRDP relative to the Existing Condition.

Table 7.5-3. Comparison of Average Annual Generation Revenue for YRDP Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	Proposed Projects	(1M$)	(%)
New Colgate PH	59.0	59.0	-0.1	0%
Narrows 2 PH	5.7	5.7	0.0	-1%
Total YRDP	64.8	64.7	-0.1	0%

Key: $1M = Millions of Dollars

There are very small reductions in annual generation revenue from YRDP relative to the Existing Condition, but average generation revenue reductions would not exceed 10% of the Existing

Condition revenue. Accordingly, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-PP-1: Change in Monthly Generation from Narrows 1 Operations

Due to its ability to provide renewable energy, the Narrows 1 Powerhouse is almost always run at its full capacity. There are some periods when releases would be slightly changed due to differences in Englebright Dam releases, particularly when desired Englebright Dam releases are in the 900 to 1,080 cfs and the Narrows 1 Powerhouse is providing flows above the Narrows 2 Powerhouse minimum capacity. As a result, there could be small change in generation, Table 7.5-4 shows a comparison of monthly generation for the Narrows Project relative to the Existing Condition.

Table 7.5-4. Comparison of Average Monthly Generation for Narrows 1 Powerhouse Relative to Existing Condition.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Existing Condition	Proposed Projects	(GWh)	(%)
July	8.2	8.3	0.0	0%
August	7.9	8.1	0.1	2%
September	7.2	7.7	0.5	7%
October	8.2	8.1	0.0	0%

Key: MW = Megawatt

Narrows 1 Powerhouse generation is generally increased during summer months and therefore would contribute to the state meeting its SB100 goals. Accordingly, Narrows 1 operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-PP-2: Change in Monthly Generation Capacity from Narrows 1 Operations

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Since there are very few changes in planned flows for the Narrows 1 Powerhouse under the Proposed Project, relative to the Existing Condition, there are very small changes in generation capacity. Table 7.5-5 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse relative to the Existing Condition.

Table 7.5-5. Comparison of Average Monthly Generation Capacity for Narrows 1 Powerhouse Relative to Existing Condition

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	Proposed Projects	(MW)	(%)
October	10.9	10.8	-0.1	-1%
November	10.9	10.9	-0.1	-1%
December	11.2	11.2	-0.1	-1%
January	11.3	11.3	0.0	0%
February	11.4	11.3	0.0	0%
March	11.5	11.4	0.0	0%
April	11.3	11.3	0.1	1%
May	11.5	11.5	0.0	0%
June	7.8	7.8	0.0	0%
July	10.1	10.1	0.0	0%
August	11.1	11.1	-0.1	-1%
September	10.5	10.6	0.2	2%

Key: MW = Megawatt

There are a very small changes in generation capacity in October, November, December, and August under the Proposed Projects relative to the Existing Conditions, but average generation capacity reductions do not exceed 5% of the Existing Condition capacity. Accordingly, Narrows 1 operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-PP-3: Reduction in Generation-Related Revenue from Narrows 1 Operations

Since there are very few changes in Narrows 1 Powerhouse generation; in fact, there is a small increase in overall generation. However, changes in generation shown in Table 7.5-5 do not result in a notable change in Narrows Project generation revenue. Table 7.5-6 shows a comparison of Narrows Project generation revenue for the Proposed Projects and Existing Condition scenarios.

Table 7.5-6. Comparison of Average Annual Generation Revenue for Narrows 1 Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	Proposed Projects	(1M$)	(%)
Narrows 1 PH	11.2	11.2	0.0	0%

Key: $1M = Millions of Dollars

There are very small reductions in annual generation revenue from Narrows 1 relative to the Existing Condition, but average generation revenue reductions would not exceed 10% of the Existing Condition revenue. Accordingly, Narrows 1 impacts would be **less than significant**, and no CEQA mitigation is required.

7.5.1.2 Energy Consumption

YRDP Impact EN-PP-4: Energy Consumption by YRDP Construction Activities

The proposed YRDP would involve the use of gasoline- and diesel-fueled vehicles and equipment during construction activities and the import/export of materials to and from the construction site. Construction activities would occur over an approximately 20-year period, with work to be done seasonally for no more than seven months in one year. The use of fuel and other energy resources during YRDP construction would be non-recoverable and potentially significant. See Appendix 2A-3 for information regarding construction equipment uses and workers during each stage of YRDP construction, which was used in the analysis in Chapter 15, Air Quality and Greenhouse Gas Emissions.

As required by MM AQ-2 - described in Chapter 15, Air Quality - all construction equipment shall be required to use EPA Tier 4 engines. In addition to reducing pollutant emissions, Tier 4 engines use 5-10% less fuel than the predecessor Tier 3 engines (ATL Diesel 2020). Therefore, YRDP construction activities would use more fuel-efficient construction equipment. Fuel consumption associated with vehicle trips would be typical of that associated with construction projects in rural areas. There are no unusual circumstances, such as lack of access, that would lead to greater fuel consumption. In addition, these vehicles would be subject to more stringent fuel economy standards (see Chapter 15), which would further reduce potential fuel consumption.

Based on the information provided above, energy consumption associated with YRDP construction would not be considered wasteful, inefficient, or unnecessary. Therefore, impacts would be **less than significant**. No additional CEQA mitigation would be required.

YRDP Impact EN-PP-5: Energy Consumption by YRDP Operations

Energy consumption would be associated primarily with the operation of non-recreational YRDP facilities. Exhibit D of the AFLA states that some of the generated power is used at the powerhouses for station use. Station energy use annually is about 1 MWh at New Colgate Powerhouse and less than 0.1 MWh each at the New Bullards Bar Minimum Flow and Narrows 2 Powerhouses (YCWA 2017). Compared with the 1,189 GWh of electricity generated annually by YRDP, station use of electricity is minimal. As indicated in Table 7.5-2, YRDP hydropower operations would not noticeably change, so station use is not expected to significantly change.

With respect to the YRDP recreation facilities, as noted in Chapter 2, Project Description, and in Appendix 2A-14, existing recreation facilities have limited electrical connections. The proposed Kelly Ridge Campground would have up to six RV sites with electric hookups. No other new electric hookups are proposed. Any electrical use at the recreation facilities would be limited to the time the facilities are open, so electrical use would be seasonal and is not anticipated to increase substantially compared to existing electrical use.

Electricity would be provided through the existing PG&E power poles and transmission lines, and emergency power may be obtained from facilities within the YRDP footprint. No additional trips would be generated for O&M, as activities would be coordinated and combined with existing maintenance trips. Therefore, impacts related to YRDP operations would be **less than significant**. No CEQA mitigation would be required.

YRDP Impact EN-PP-6: YRDP Construction Conflicts with Renewable Energy or Energy Efficiency Plans

As discussed under YRDP Impact EN-PP-4, YRDP construction activities would primarily involve fuel consumption, which would be non-recoverable but not wasteful, inefficient, or unnecessary. As such, YRDP construction would not conflict with renewable energy plans such as the Renewables Portfolio Standard or the Resource Adequacy Program. Construction activities would not conflict with local renewable energy or energy efficiency plans, as no local energy plans would apply. Therefore, impacts related to YRDP construction would be **less than significant**. No CEQA mitigation would be required.

YRDP Impact EN-PP-7: YRDP Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Proposed YRDP operations would not conflict with local renewable energy or energy efficiency plans, as no local energy plans would apply. All facilities would be constructed in accordance with applicable provisions of the California Green Building Standards Code and the California Energy Code. Operations would not affect NID facilities, and solar-powered lighting would be used at two entrance station kiosks.

Because of this, YRDP operations would not conflict with or obstruct State or local energy efficiency codes. Moreover, as the Proposed YRDP Project would continue to generate hydroelectric power, it would not conflict with the attainment of renewable energy targets set forth in the Renewables Portfolio Standard. Therefore, impacts related to YRDP operations would be **less than significant**. No CEQA mitigation would be required.

Narrows Impact EN-PP-4: Energy Consumption by Narrows 1 Operations

Energy consumption would be limited to what is needed for the operation of the Narrows and associated facilities. The Narrows 1 Powerhouse is estimated to require less than 1 kW of electricity annually during operations (YCWA 2023). Compared with the approximately 75.38 GWh of electricity generated in one year, station use of electricity is minimal. As indicated in Tables 7.5-2 and 7.5-3, Narrows 1 hydropower operations would not noticeably change, so station use is not expected to significantly change.

Operational electricity would come from the existing PG&E power poles and transmission lines, and emergency power may be obtained from facilities within the Narrows footprint. No additional trips would be generated for O&M as activities would be coordinated and combined with existing maintenance trips. Therefore, impacts related to Narrows operations would be **less than significant**. No CEQA mitigation would be required.

Narrows Impact EN-PP-5: Narrows 1 Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Proposed Narrows Project operations would not conflict with local renewable energy or energy efficiency plans, as no local energy plans would apply. The Narrows Project does not propose the construction of new or expanded facilities. Moreover, as the Proposed Narrows Project would continue to generate hydroelectric power, it would not conflict with the attainment of renewable

energy targets set forth in the Renewables Portfolio Standard. Therefore, impacts on renewable energy or energy efficiency plans related to Narrows Project operations would be **less than significant**. No CEQA mitigation would be required.

7.5.2 Proposed Projects compared to the Future Baseline

7.5.2.1 Energy Production

YRDP Impact EN-FPP-1: Change in Monthly Generation from YRDP Operations

Operations for the YRDP include increased flow requirements in the Middle Yuba River below Our House Dam, increased flow requirements in Oregon Creek below Log Cabin Dam, increased flows in the North Yuba River below New Bullards Bar Dam, and periodic closures of the Lohman Ridge Tunnel. These elements will each contribute to a reduction in flows from the New Colgate Powerhouse and a reduction in generation. Since flows in the lower Yuba River are not changing substantially, there would not be substantial changes in generation at the Narrows 2 Powerhouse. Table 7.5-7 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse.

Table 7.5-7. Comparison of Average Monthly Generation for YRDP Facilities Relative to Future Baseline.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Future Baseline	Future Proposed Projects	(GWh)	(%)
October	50.3	49.1	-1.2	-2%
November	48.3	45.7	-2.6	-5%
December	64.9	60.2	-4.7	-7%
January	85.7	80.3	-5.4	-6%
February	99.7	93.9	-5.8	-6%
March	157.2	152.6	-4.7	-3%
April	134.0	131.8	-2.2	-2%
May	175.1	167.3	-7.8	-4%
June	175.7	166.4	-9.3	-5%
July	158.2	152.9	-5.3	-3%
August	137.4	131.2	-6.2	-5%
September	62.2	58.9	-3.3	-5%

Key: MW = Megawatt

While there is a reduction in average YRDP generation in most months relative to the Future Baseline, average generation reductions reach their maximum of 7% in December. Other months have smaller reductions as such, average monthly decreases would not be greater than 10%. Accordingly, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact EN-FPP-2: Change in Monthly Generation Capacity from YRDP Operations

The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its planned flows. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse would reduce the amount of RA the YRDP can provide. Table 7.5-8 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses for the Proposed Projects and Future Baseline scenarios.

Table 7.5-8. Comparison of Average Monthly Generation Capacity for YRDP Facilities Relative to Future Baseline.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Future Baseline	Future Proposed Projects	(MW)	(%)
October	301	299	-2	-1%
November	290	285	-6	-2%
December	285	279	-6	-2%
January	280	274	-5	-2%
February	291	280	-11	-4%
March	323	314	-9	-3%
April	340	346	6	2%
May	359	357	-2	0%
June	359	359	-1	0%
July	342	342	-1	0%
August	328	327	-1	0%
September	308	307	-1	0%

Key: MW = Megawatt

There are very small changes in generation capacity in October, November, December, January, February, and March, under the Proposed Projects relative to the Future Baseline, average generation capacity reductions are less than 15% of the Future Baseline capacity. Accordingly, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact EN-FPP-3: Reduction in Generation-Related Revenue from YRDP Operations

While the New Colgate Powerhouse's flexible operations allow it to target hours of high energy demand and the associated higher economic value, the Narrows 2 Powerhouse runs consistently through every hour of a day. The New Colgate Powerhouse's operational flexibility allows it to adjust generation to minimize the economic effects of reductions in generation shown in Table 7.5-7. Table 7.5-9 shows a comparison of the average annual generation revenue for the YRDP facilities relative to the Future Baseline.

Table 7.5-9. Comparison of Average Annual Generation Revenue for YRDP Facilities Relative to Future Baseline.

	Generation Revenue ($1M)		Change in Revenue	
	Future Baseline	Future Proposed Projects	(1M$)	(%)
New Colgate PH	59.4	57.0	-2.4	-4%
Narrows 2 PH	5.9	5.9	0.0	0%
Total YRDP	65.3	63.0	-2.4	-4%

Key: $1M = Millions of Dollars

There are very small changes in annual generation revenue relative to the Future Baseline, but average generation revenue reductions do not exceed 10% of the Future Baseline revenue. Accordingly, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-FPP-1: Change in Monthly Generation from Narrows 1 Operations

Due to its ability to provide renewable energy, the Narrows 1 Powerhouse is almost always run at its full capacity. There are some periods when releases would be slightly changed due to differences in Englebright Dam releases, particularly when desired Englebright Dam releases are in the 900 to 1,080 cfs and the Narrows 1 Powerhouse is providing flows above the Narrows 2 Powerhouse minimum capacity. As a result, there could be small change in generation, Table 7.5-10 shows a comparison of monthly generation for the Narrows 1 Powerhouse relative to the Future Baseline scenario.

Table 7.5-10. Comparison of Average Monthly Generation for Narrows 1 Relative to Future Baseline.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Future Baseline	Future Proposed Projects	(GWh)	(%)
July	8.3	8.3	0.1	1%
August	7.9	8.1	0.1	2%
September	7.2	7.7	0.5	7%
October	8.2	8.1	-0.1	-1%

Key: MW = Megawatt

Narrows 1 Powerhouse generation is generally increased during summer months, but there would be an approximately 1% reduction in generation in October. Therefore, it would contribute to the state meeting its SB100 goals. Accordingly, Narrows 1 operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-FPP-2: Change in Monthly Generation Capacity from Narrows 1 Operations

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Since there are very few changes in planned flows for the Narrows 1 Powerhouse under the Proposed Projects, relative to the Future Baseline, there are very small changes in generation capacity. Table 7.5-11 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse relative to the Future Baseline.

Table 7.5-11. Comparison of Average Monthly Generation Capacity for Narrows 1 Relative to Future Baseline.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Future Baseline	Future Proposed Projects	(MW)	(%)
October	11.0	10.9	-0.1	0.0
November	11.0	10.9	-0.1	0.0
December	11.3	11.2	-0.1	0.0
January	11.3	11.3	0.0	0.0
February	11.4	11.3	0.0	0.0
March	11.5	11.4	0.0	0.0
April	11.3	11.3	0.1	0.0
May	11.5	11.5	0.0	0.0
June	7.9	7.8	-0.1	0.0
July	10.0	10.1	0.1	0.0
August	11.1	11.1	0.0	0.0
September	10.5	10.7	0.2	0.0

Key: MW = Megawatt

There are a very small changes in generation capacity in October, November, December, and August under Narrows 1 relative to the Future Baseline, but average generation capacity reductions do not exceed 5% of the Future Baseline capacity. Accordingly, Narrows 1 operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-FPP-3: Reduction in Generation-Related Revenue from Narrows 1 Operations

There are very few changes in Narrows 1 Powerhouse generation; in fact, there is a small increase in overall generation. However, changes in generation shown in Table 7.5-11 do not result in a notable change in Narrows Project generation revenue. Table 7.5-12 shows a comparison of Narrows Project generation revenue relative to the Future Baseline scenarios.

Table 7.5-12. Comparison of Average Annual Generation Revenue for Narrows 1 Relative to Future Baseline.

	Generation Revenue ($1M)		Change in Revenue	
	Future Baseline	Future Proposed Projects	(1M$)	(%)
Narrows 1 PH	11.2	11.2	0.0	0%

Key: $1M = Millions of Dollars

There are very small decreases in annual generation revenue relative to the Future Baseline, but average generation revenue reductions do not exceed 10% of the Future Baseline revenue. Accordingly, Narrows operational impacts would be **less than significant**, and no CEQA mitigation is required.

7.5.3 Alternative 1 compared to the Existing Condition

As described in Section 4.4, comparison of flow-related impacts to the Existing Condition is misleading; as such, flow-related impacts are analyzed relative to the Future Baseline. Comparisons of these impacts to the Existing Condition are presented for informational purposes only. However, construction impacts and impacts not related to flows are analyzed relative to the Existing Condition.

7.5.3.1 Energy Production

YRDP Impact EN-Alt1-1: Change in Monthly Generation by YRDP Operations

YRDP Operations under Alternative 1 include increased flow requirements in the Middle Yuba River below Our House Dam, increased flow requirements in Oregon Creek below Log Cabin Dam, increased flows in the North Yuba River below New Bullards Bar Dam, and periodic closures of the Lohman Ridge Tunnel. These elements of Alternative 1 will each contribute to a reduction in flows from the New Colgate Powerhouse and a reduction in generation. Since flows in the lower Yuba River are not changing substantially, there would not be substantial changes in generation at the Narrows 2 Powerhouse. Table 7.5-13 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse.

Table 7.5-13. Comparison of Average Monthly Generation for Alternative 1 Relative to Existing Condition.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Existing Condition	Alternative 1	(GWh)	(%)
October	8.2	8.2	0.0	0%
November	7.9	7.8	-0.1	-1%
December	8.3	8.1	-0.2	-3%
January	8.3	8.3	0.0	0%
February	7.5	7.5	-0.1	-1%
March	8.2	8.1	-0.1	-2%
April	7.7	7.8	0.2	2%
May	8.3	8.3	0.0	0%
June	4.3	4.3	0.0	1%
July	8.2	8.3	0.1	1%
August	7.9	8.1	0.1	2%
September	7.2	7.9	0.7	10%

Key: MW = Megawatt

YRDP Impact EN-Alt1-2: Change in Monthly Generation Capacity from YRDP Operations

The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its planned flows. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse

would reduce the amount of RA the YRDP can provide. Table 7.5-14 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses for the Alternative 1 and Existing Condition.

Table 7.5-14. Comparison of Average Monthly Generation Capacity for Alternative 1 Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	Alternative 1	(MW)	(%)
October	299	299	0	0%
November	289	285	-4	-1%
December	282	280	-2	-1%
January	280	274	-7	-2%
February	285	280	-5	-2%
March	315	314	-1	0%
April	339	344	5	1%
May	358	358	0	0%
June	359	359	0	0%
July	340	342	2	0%
August	326	327	1	0%
September	307	308	1	0%

Key: MW = Megawatt

YRDP Impact EN-Alt1-3: Reduction in Generation-Related Revenue Operations

While the New Colgate Powerhouse's flexible operations allow it to target hours of high energy demand and the associated higher economic value, the Narrows 2 Powerhouse runs consistently through every hour of a day. The New Colgate Powerhouse's operational flexibility allows it to adjust generation to minimize the economic effects of reductions in generation shown in YRDP Operations under Alternative 1 include increased flow requirements in the Middle Yuba River below Our House Dam, increased flow requirements in Oregon Creek below Log Cabin Dam, increased flows in the North Yuba River below New Bullards Bar Dam, and periodic closures of the Lohman Ridge Tunnel. These elements of Alternative 1 will each contribute to a reduction in flows from the New Colgate Powerhouse and a reduction in generation. Since flows in the lower Yuba River are not changing substantially, there would not be substantial changes in generation at the Narrows 2 Powerhouse. Table 7.5-14 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse. Table 7.5-15 shows a comparison of the average annual generation revenue for Alternative 1 and the Existing Condition.

Table 7.5-15. Comparison of Average Annual Generation Revenue for Alternative 1 Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	Alternative 1	(1M$)	(%)
New Colgate PH	59.0	57.1	-1.9	-3%
Narrows 2 PH	5.7	6.0	0.2	4%
Total YRDP	64.8	63.1	-1.7	-3%

Key: $1M = Millions of Dollars

Narrows Impact EN-Alt1-1: Change in Monthly Generation from Narrows 1 Operations

Due to its ability to provide renewable energy, the Narrows 1 Powerhouse is almost always running at full capacity. There are some periods when releases would be slightly changed due to differences in Englebright Dam releases, particularly when desired Englebright Dam releases are in the 900 to 1,080 cfs and the Narrows 1 Powerhouse is providing flows above the Narrows 2 Powerhouse minimum capacity. As a result, there could be small change in generation, Table 7.5-16 shows a comparison of monthly generation for Alternative 1 and the Existing Condition.

Table 7.5-16. Comparison of Average Monthly Generation for Alternative 1 Relative to Existing Condition.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Existing Condition	Alternative 1	(GWh)	(%)
July	8.2	8.3	0.0	0%
August	7.9	8.1	0.1	2%
September	7.2	7.7	0.5	7%
October	8.2	8.1	0.0	0%

Key: MW = Megawatt

Narrows Impact EN-Alt1-2: Change in Monthly Generation Capacity from Narrows 1 Operations

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Since there are very few changes in planned flows for the Narrows 1 Powerhouse under the Alternative 1, relative to the Existing Condition, there are very small changes in generation capacity. Table 7.5-17 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse for the Alternative 1 and Existing Condition.

Table 7.5-17. Comparison of Average Monthly Generation Capacity for Alternative 1 Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	Alternative 1	(MW)	(%)
October	10.9	11.0	0.0	0%
November	10.9	10.9	-0.1	-1%
December	11.2	11.2	-0.1	-1%
January	11.3	11.3	0.0	0%
February	11.4	11.3	0.0	0%
March	11.5	11.4	0.0	0%
April	11.3	11.3	0.1	1%
May	11.5	11.5	0.0	0%
June	7.8	7.8	0.0	0%
July	10.1	10.1	0.1	1%
August	11.1	11.1	0.0	0%
September	10.5	10.7	0.3	2%

Key: MW = Megawatt

Narrows Impact EN-Alt1-3: Reduction in Generation-Related Revenue from Narrows 1 Operations

There are very few changes in Narrows 1 Powerhouse generation. In fact, there is a small increase in overall generation. However, changes in generation shown in Table 7.5-17 do not result in a notable change in Narrows Project generation revenue. Table 7.5-18 shows a comparison of Narrows Project generation revenue for Alternative 1 and the Existing Condition.

Table 7.5-18. Comparison of Average Annual Generation Revenue for Alternative 1 Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	Alternative 1	(1M$)	(%)
Narrows 1 PH	11.2	11.2	0.0	0%

Key: $1M = Millions of Dollars

7.5.3.2 Energy Consumption

YRDP Impact EN-Alt1-4: Energy Consumption by YRDP Construction

Alternative 1 would include the same YRDP construction activities as the Proposed Projects and therefore would have the same associated impacts. For the same reasons explained above for YRDP Impact EN-PP-4, this impact would be **less than significant**.

YRDP Impact EN-Alt1-5: Energy Consumption by YRDP Operations

Alternative 1 would include the same YRDP facilities and the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Differences in flow-based operations would not result in substantially different energy consumption

requirements. Thus, for the same reasons explained for YRDP Impact EN-PP-5, this impact would be **less than significant**.

YRDP Impact EN-Alt1-6: YRDP Construction Conflicts with Renewable Energy or Energy Efficiency Plans

Alternative 1 would include the same YRDP construction activities as the Proposed Projects and therefore would have the same associated impacts. For the same reasons explained above for YRDP Impact EN-PP-6, this impact would be **less than significant**.

YRDP Impact EN-Alt1-7: YRDP Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Alternative 1 would include the same YRDP facilities and the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts described above for YRDP Impact EN-PP-7. Under Alternative 1, the YRDP would continue to generate hydroelectric power. For these reasons, YRDP operations under Alternative 1 would not conflict with renewable energy or energy efficiency plans, and this impact would be **less than significant**.

Narrows Impact EN-Alt1-4: Energy Consumption by Narrows 1 Operations

Alternative 1 would include the same Narrows Project facilities and non-flow Narrows Project operations as the Proposed Projects and would therefore have the same associated impacts. Differences in flows would not result in substantially different energy consumption requirements. Thus, for the same reasons explained for Narrows Impact EN-PP-4, this impact would be **less than significant**.

Narrows Impact EN-Alt1-5: Narrows 1 Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Alternative 1 would include the same Narrows Project facilities and the same non-flow Narrows Project operations as the Proposed Projects and would therefore have the same associated impacts described above for Narrows Impact EN-PP-5. Under Alternative 1, the Narrows Project would continue to generate hydroelectric power. For these reasons, Narrows Project operations under Alternative 1 would not conflict with renewable energy or energy efficiency plans, and this impact would be **less than significant**.

7.5.4 Alternative 1 compared to the Future Baseline

7.5.4.1 As noted in Section 7.5.3, flow-related impacts are analyzed relative to the Future Baseline. Energy Production

YRDP Impact EN-FAlt1-1: Change in Monthly Generation from YRDP Operations

YRDP operations under Alternative 1 include increased flow requirements in the Middle Yuba River below Our House Dam, increased flow requirements in Oregon Creek below Log Cabin Dam, increased flows in the North Yuba River below New Bullards Bar Dam, and periodic closures of the Lohman Ridge Tunnel. These elements of Alternative 1 will each contribute to a

reduction in flows from the New Colgate Powerhouse and a reduction in generation. Since flows in the lower Yuba River are not changing substantially, there would not be substantial changes in generation at the Narrows 2 Powerhouse. Table 7.5-19 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse.

Table 7.5-19. Comparison of Average Monthly Generation for Alternative 1 Relative to Future Baseline.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Future Baseline	Alternative 1	(GWh)	(%)
October	51.8	49.8	-2.0	-4%
November	49.5	46.1	-3.4	-7%
December	64.0	60.7	-3.3	-5%
January	84.5	80.1	-4.4	-5%
February	96.6	93.8	-2.8	-3%
March	151.7	151.9	0.2	0%
April	132.6	129.4	-3.2	-2%
May	174.3	168.1	-6.1	-4%
June	176.9	166.5	-10.4	-6%
July	155.5	152.3	-3.1	-2%
August	134.9	131.3	-3.6	-3%
September	63.7	63.4	-0.3	0%

Key: MW = Megawatt

While there is a reduction in average YRDP generation in most months under Alternative 1 relative to the Future Baselines, average generation reductions reach their maximum of 7% in November. Other months have smaller reductions. Accordingly, YRDP operational impacts under Alternative 1 would be **less than significant**.

YRDP Impact EN-FAlt1-2: Change in Monthly Generation Capacity from YRDP Operations

The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its planned flows. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse would reduce the amount of RA the YRDP can provide. Table 7.5-20 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses for Alternative 1 and Future Baseline.

Table 7.5-20. Comparison of Average Monthly Generation Capacity for Alternative 1 Relative to Future Baseline.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Future Baseline	Alternative 1	(MW)	(%)
October	301	299	-1	0%
November	290	285	-6	-2%
December	285	280	-6	-2%
January	280	274	-6	-2%
February	291	280	-11	-4%
March	323	314	-9	-3%
April	340	344	3	1%
May	359	358	-1	0%
June	359	359	0	0%
July	342	342	0	0%
August	328	327	-1	0%
September	308	308	0	0%

Key: MW = Megawatt

There are very small changes in generation capacity all months except for April, June, July, and September under Alternative 1 relative to the Future Baseline, average generation capacity reductions are less than 15% of the Future Baseline capacity. Accordingly, YRDP operational impacts under Alternative 1 would be **less than significant**.

YRDP Impact EN-FAlt1-3: Reduction in Generation-Related Revenue from YRDP Operations

While the New Colgate Powerhouse's flexible operations allow it to target hours of high energy demand and the associated higher economic value, the Narrows 2 Powerhouse runs consistently through every hour of a day. The New Colgate Powerhouse's operational flexibility allows it to adjust generation to minimize the economic effects of reductions in generation shown in YRDP operations under Alternative 1 include increased flow requirements in the Middle Yuba River below Our House Dam, increased flow requirements in Oregon Creek below Log Cabin Dam, increased flows in the North Yuba River below New Bullards Bar Dam, and periodic closures of the Lohman Ridge Tunnel. These elements of Alternative 1 will each contribute to a reduction in flows from the New Colgate Powerhouse and a reduction in generation. Since flows in the lower Yuba River are not changing substantially, there would not be substantial changes in generation at the Narrows 2 Powerhouse. Table 7.5-19 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse. Table 7.5-21 shows a comparison of the average annual generation revenue for Alternative 1 relative to the Future Baseline.

Table 7.5-21. Comparison of Average Annual Generation Revenue for Alternative 1 Relative to Future Baseline.

	Generation Revenue ($1M)		Change in Revenue	
	Future Baseline	Alternative 1	(1M$)	(%)
New Colgate PH	59.4	57.1	-2.3	-4%
Narrows 2 PH	5.9	6.0	0.0	1%
Total YRDP	65.3	63.1	-2.2	-3%

Key: $1M = Millions of Dollars

There are small decreases in annual generation revenue under Alternative 1 relative to the Future Baseline, but average generation revenue reductions do not exceed 10% of Future Baseline revenue. Accordingly, YRDP impacts under Alternative 1 would be **less than significant**.

Narrows Impact EN-FAlt1-1: Change in Monthly Generation from Narrows 1 Operations

Due to its ability to provide renewable energy, the Narrows 1 Powerhouse is almost always run at its full capacity. There are some periods when releases would be slightly changed due to differences in Englebright Dam releases, particularly when desired Englebright Dam releases are in the 900 to 1,080 cfs and the Narrows 1 Powerhouse is providing flows above the Narrows 2 Powerhouse minimum capacity. As a result, there could be small change in generation, Table 7.5-22 shows a comparison of monthly generation for the Alternative 1 and Future Baseline.

Table 7.5-22. Comparison of Average Monthly Generation for Alternative 1 Relative to Future Baseline.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Future Baseline	Alternative 1	(GWh)	(%)
July	8.3	8.3	0.1	1%
August	7.9	8.1	0.2	2%
September	7.2	7.9	0.7	9%
October	8.2	8.2	0.0	0%

Key: MW = Megawatt

Narrows 1 Powerhouse generation is generally increased during summer months, and therefore would contribute to the state meeting its SB100 goals. Accordingly, Narrows 1 operational impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact EN-FAlt1-2: Change in Monthly Generation Capacity from Narrows 1 Operations

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Since there are very few changes in planned flows for the Narrows 1 Powerhouse under the Alternative 1, relative to the Future Baseline, there are very small changes in generation capacity. Table 7.5-23 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse for Alternative 1 under the Future Baseline.

Table 7.5-23. Comparison of Average Monthly Generation Capacity for Alternative 1 Relative to Future Baseline.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Future Baseline	Alternative 1	(MW)	(%)
October	11.0	11.0	0.0	0%
November	11.0	10.9	-0.1	-1%
December	11.3	11.2	-0.1	-1%
January	11.3	11.3	0.0	0%
February	11.4	11.3	0.0	0%
March	11.5	11.4	0.0	0%
April	11.3	11.3	0.1	1%
May	11.5	11.5	0.0	0%
June	7.9	7.8	-0.1	-1%
July	10.0	10.1	0.1	1%
August	11.1	11.1	0.0	0%
September	10.5	10.7	0.2	2%

Key: MW = Megawatt

There are very small decreases in generation capacity in November, December, and June under Alternative 1 relative to the Future Baseline, but average generation capacity reductions do not exceed 5% of the Future Baseline capacity. Accordingly, Narrows operational impacts under Alternative 1 would be **less than significant**.

Narrows Impact EN-FAlt1-3: Reduction in Generation-Related Revenue from Narrows 1 Operations

There are very few changes in Narrows 1 Powerhouse generation; in fact, there is a small increase in overall generation. However, changes in generation shown in Table 7.5-23 do not result in a notable change in Narrows Project generation revenue. Table 7.5-24 shows a comparison of Narrows Project generation revenue for Alternative 1 under the Future Baseline.

Table 7.5-24. Comparison of Average Annual Generation Revenue for Alternative 1 Relative to Future Baseline.

	Generation Revenue ($1M)		Change in Revenue	
	Future Baseline	Alternative 1	(1M$)	(%)
Narrows 1 PH	11.2	11.2	0.0	0%

Key: $1M = Millions of Dollars

There are small changes in annual generation revenue under Alternative 1 relative to the Future Baseline, but average generation revenue reductions do not exceed 10% of the Future Baseline revenue. Accordingly, Narrows operational impacts under Alternative 1 would be **less than significant**.

Indirect Impact EN-FAlt1-1: Potential Reduction in Energy Generation from NID and PG&E Project Operations under Alternative 1

Alternative 1 includes 15,600 acre-feet of additional releases from NID and PG&E's projects above their respective proposed FERC 4(e) requirements in the spring of dry and critical years. For purposes of the programmatic analysis of indirect impacts associated with Alternative 1 YB/DS operations, Yuba Water has modeled these operations with 5,000 acre-feet on the Middle Yuba River and 10,600 acre-feet from the South Yuba River as a block of flow on top of minimum flows in April to provide a reasonable representation of inflows to the YRDP and Narrows Project for use in evaluating the effects of changes in Yuba-Bear and Drum-Spaulding projects' flow regimes on YRDP and Narrows Project resource areas. The actual distribution and timing of the additional block of water would be subject to FERC's determination and consultation with applicable regulatory agencies.

NID's modeling for Alternative 1 using a similar distribution of responsibility between NID and PG&E for the 15,600 acre-feet indicated an average annual reduction in generation of 2.3% for PG&E and a reduction in average annual generation of 2.2% for NID in dry and critical years. Based on the other information provided by NID, Alternative 1 would represent a total combined reduction in generation of 2.3% relative to NID's Yuba-Bear and PG&E's Drum-Spaulding projects' combined average annual generation in dry and critical years, under operations for their respective 4(e) conditions (NID 2023). No information is available for change in average annual generation.

In response to the reduction in generation from the NID and PG&E projects, CAISO would likely be able to procure additional generation from other resources. Reduction in generation from baseload plants during the day could largely be replaced through reductions in CAISO exports. Plants with peaking capabilities should be able to maintain their ability to generate during periods with high demand. Accordingly, impacts on NID and PG&E energy production due to Alternative 1 YB/DS operations would be **less than significant**. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

7.5.5 Alternative 2 compared to the Existing Condition

As described in Section 4.4, comparison of flow-related impacts to the Existing Condition is misleading; as such, flow-related impacts are analyzed relative to the Future Baseline. Comparisons of these impacts to the Existing Condition are presented for informational purposes only. However, construction impacts and impacts not related to flows are analyzed relative to the Existing Condition.

7.5.5.1 Energy Production

YRDP Impact EN-Alt2-1: Change in Monthly Generation from YRDP Operations]

YRDP Operations under Alternative 2 include all of the elements described for the Proposed Projects plus the unimpaired flow requirements. The increased Middle Yuba River flow requirements will preclude diversion through the Lohman Ridge and Camptonville tunnels into New Bullards Bar Reservoir. Elements of Alternative 2 will contribute to a general reduction in flows through the New Colgate Powerhouse and a reduction in generation, particularly in the summer, but the higher unimpaired flow requirements will result in higher spring releases when there is already ample generation from renewable resources available. There will be an accompanying shift to higher spring flows from the Narrows 2 Powerhouse and higher frequency of spills over Englebright Dam, resulting in higher spring generation at Narrows 2 Powerhouse, but less overall generation. Table 7.5-25 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse.

Table 7.5-25. Comparison of Average Monthly Generation for Alternative 2 Relative to Existing Condition.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Existing Condition	Alternative 2	(GWh)	(%)
October	51.8	45.2	-6.6	-13%
November	49.5	46.9	-2.6	-5%
December	64.0	69.7	5.7	9%
January	84.5	89.9	5.4	6%
February	96.6	100.6	3.9	4%
March	151.7	140.7	-11.0	-7%
April	132.6	146.9	14.3	11%
May	174.3	179.6	5.4	3%
June	176.9	165.1	-11.8	-7%
July	155.5	123.0	-32.5	-21%
August	134.9	98.5	-36.4	-27%
September	63.7	48.7	-15.0	-23%

Key: MW = Megawatt

YRDP Impact EN-Alt2-2: Change in Monthly Generation Capacity from YRDP Operations

As described above, the New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its releases. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse would reduce the amount of RA the YRDP can provide. Table 7.5-26 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses for Alternative 2 the Existing Condition.

Table 7.5-26. Comparison of Average Monthly Generation Capacity for Alternative 2 Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	Alternative 2	(MW)	(%)
October	299	294	-6	-2%
November	289	283	-6	-2%
December	282	281	-1	0%
January	280	285	5	2%
February	285	298	13	5%
March	315	321	6	2%
April	339	349	10	3%
May	358	358	0	0%
June	359	351	-7	-2%
July	340	329	-11	-3%
August	326	315	-11	-3%
September	307	300	-6	-2%

Key: MW = Megawatt

YRDP Impact EN-Alt2-3: Reduction in Generation-Related Revenue from YRDP Operations

While the New Colgate Powerhouse's flexible operations allow it to target hours of high energy demand and the associated higher economic value, the Narrows 2 Powerhouse runs consistently through every hour of a day. The New Colgate Powerhouse's operational flexibility allows it to adjust generation to minimize the economic effects of reductions in generation shown in YRDP Operations under Alternative 2 include all of the elements described for the Proposed Projects plus the unimpaired flow requirements. The increased Middle Yuba River flow requirements will preclude diversion through the Lohman Ridge and Camptonville tunnels into New Bullards Bar Reservoir. Elements of Alternative 2 will contribute to a general reduction in flows through the New Colgate Powerhouse and a reduction in generation, particularly in the summer, but the higher unimpaired flow requirements will result in higher spring releases when there is already ample generation from renewable resources available. There will be an accompanying shift to higher spring flows from the Narrows 2 Powerhouse and higher frequency of spills over Englebright Dam, resulting in higher spring generation at Narrows 2 Powerhouse, but less overall generation. Table 7.5-25 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse. Table 7.5-27 shows a comparison of the average annual generation revenue for Alternative 2 relative to the Existing Condition.

Table 7.5-27. Comparison of Average Annual Generation Revenue for Alternative 2 Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	Alternative 2	(1M$)	(%)
New Colgate PH	59.0	54.7	-4.4	-7%
Narrows 2 PH	5.7	6.3	0.6	10%
Total YRDP	64.8	61.0	-3.8	-6%

Key: $1M = Millions of Dollars

Narrows Impact EN-Alt2-1: Change in Monthly Generation from Narrows 1 Operations

Due to its ability to provide renewable energy, the Narrows 1 Powerhouse is almost always running at full capacity. There are some periods when releases would be slightly changed due to differences in Englebright Dam releases, particularly when desired Englebright Dam releases are in the 900 to 1,080 cfs and the Narrows 1 Powerhouse is providing flows above the Narrows 2 Powerhouse minimum capacity. Since Alternative 2 decreases summer flows, there are more periods when Englebright Dam releases are in this range, and as a result, there will be reductions in Narrows Project generation, Table 7.5-28 shows a comparison of monthly generation for Alternative 2 relative to the Existing Condition.

Table 7.5-28. Comparison of Average Monthly Generation for Alternative 2 Relative to Existing Condition.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Existing Condition	Alternative 2	(GWh)	(%)
July	8.2	7.2	-1.0	-12%
August	7.9	7.1	-0.9	-11%
September	7.2	7.3	0.1	2%
October	8.2	8.1	0.0	0%

Key: MW = Megawatt

Narrows Impact EN-Alt2-2: Change in Monthly Generation Capacity [Operations]

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Under Alternative 2, there will be notable reductions in planned flows for the Narrows 1 Powerhouse under Alternative 2, relative to the Existing Condition, in the summer. There are associated reductions in generation capacity in the summer. Table 7.5-29 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse for Alternative 2 relative to the Existing Condition.

Table 7.5-29. Comparison of Average Monthly Generation Capacity for Alternative 2 Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	Alternative 2	(MW)	(%)
October	10.9	10.8	-0.1	-1%
November	10.9	10.9	-0.1	-1%
December	11.2	11.1	-0.1	-1%
January	11.3	11.4	0.1	1%
February	11.4	11.4	0.0	0%
March	11.5	11.5	0.0	0%
April	11.3	11.5	0.2	2%
May	11.5	11.5	0.1	1%
June	7.8	7.9	0.1	1%
July	10.1	9.6	-0.4	-4%
August	11.1	10.5	-0.6	-5%
September	10.5	10.8	0.3	3%

Key: MW = Megawatt

Narrows Impact EN-Alt2-3: Reduction in Generation-Related Revenue from Narrows Operations

There are decreases in Narrows 1 Powerhouse generation; the associated changes in generation shown in Table 7.5-29 do not result in a notable change in Narrows Project generation revenue. Table 7.5-30 shows a comparison of Narrows Project generation revenue for Alternative 2 relative to the Existing Condition.

Table 7.5-30. Comparison of Average Annual Generation Revenue for Alternative 2 Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	Alternative 2	(1M$)	(%)
Narrows 1 PH	11.2	11.2	-0.1	-1%

Key: $1M = Millions of Dollars

7.5.5.2 Energy Consumption

YRDP Impact EN-Alt2-4: Energy Consumption by YRDP Construction

Alternative 2 would include the same YRDP construction activities as the Proposed Projects and therefore would have the same associated impacts. For the same reasons explained above for YRDP Impact EN-PP-4, this impact would be **less than significant**.

YRDP Impact EN-Alt2-5: Energy Consumption by YRDP Operations

Alternative 2 would include the same YRDP facilities and the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Differences in flow-based operations would not result in substantially different energy consumption

requirements. Thus, for the same reasons explained for YRDP Impact EN-PP-5, this impact would be **less than significant**.

YRDP Impact EN-Alt2-6: YRDP Construction Conflicts with Renewable Energy or Energy Efficiency Plans

Alternative 2 would include the same YRDP construction activities as the Proposed Projects and therefore would have the same associated impacts. For the same reasons explained above for YRDP Impact EN-PP-6, this impact would be **less than significant**.

YRDP Impact EN-Alt2-7: YRDP Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Alternative 2 would include the same YRDP facilities and the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts described above for YRDP Impact EN-PP-7. Under Alternative 2, the YRDP would continue to generate hydroelectric power, though power generation under Alternative 2 would generally be reduced as a result of the unimpaired flow requirements. Overall, YRDP operations under Alternative 2 would not conflict with renewable energy or energy efficiency plans, and this impact would be **less than significant**.

Narrows Impact EN-Alt2-4: Energy Consumption by Narrows Operations

Alternative 2 would include the same Narrows Project facilities and non-flow Narrows Project operations as the Proposed Projects and would therefore have the same associated impacts. Differences in flows would not result in substantially different energy consumption requirements. Thus, for the same reasons explained for Narrows Impact EN-PP-4, this impact would be **less than significant**.

Narrows Impact EN-Alt2-5: Narrows 1 Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Alternative 2 would include the same Narrows Project facilities and the same non-flow Narrows Project operations as the Proposed Projects and would therefore have the same associated impacts described above for Narrows Impact EN-PP-5. Under Alternative 2, the Narrows Project would continue to generate hydroelectric power, though power generation under Alternative 2 would generally be reduced as a result of the unimpaired flow requirements. Overall, Narrows Project operations under Alternative 2 would not conflict with renewable energy or energy efficiency plans, and this impact would be **less than significant**.

7.5.6 Alternative 2 compared to the Future Baseline

As noted in Section 7.5.5, flow-related impacts are analyzed relative to the Future Baseline.

7.5.6.1 Energy Production

YRDP Impact EN-FAlt2-1: Change in Monthly Generation from YRDP Operations

YRDP operations under Alternative 2 include all of the elements described for the Proposed Projects plus the unimpaired flow requirements. The increased Middle Yuba River flow requirements will preclude diversion through the Lohman Ridge and Camptonville tunnels into New Bullards Bar Reservoir. Elements of Alternative 2 will contribute to a general reduction in flows through the New Colgate Powerhouse and a reduction in generation, particularly in the summer, but the higher unimpaired flow requirements will result in higher spring releases when there is already ample generation from renewable resources available. There will be an accompanying shift to higher spring flows from the Narrows 2 Powerhouse and higher frequency of spills over Englebright Dam, resulting in higher spring generation at Narrows 2 Powerhouse, but less overall generation. Table 7.5-31 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse.

Table 7.5-31. Comparison of Average Monthly Generation for Alternative 2 Relative to Future Baseline.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Future Baseline	Alternative 2	(GWh)	(%)
October	50.3	45.2	-5.1	-10%
November	48.3	46.9	-1.4	-3%
December	64.9	69.7	4.8	7%
January	85.7	89.9	4.2	5%
February	99.7	100.6	0.9	1%
March	157.2	140.7	-16.5	-11%
April	134.0	146.9	12.9	10%
May	175.1	179.6	4.5	3%
June	175.7	165.1	-10.6	-6%
July	158.2	123.0	-35.2	-22%
August	137.4	98.5	-38.9	-28%
September	62.2	48.7	-13.4	-22%

Key: MW = Megawatt

Alternative 2 would result in large reductions in average monthly generation in several months, particularly in March, July, August, and September when reductions in generation would exceed 10%. This degree of reduced generation, particularly in the summer when reductions in generation exceed 20%, would represent a substantial risk to CAISO grid stability. Other generation resources are typically already utilized during high-demand periods, so it is not reasonable to assume other carbon-free resources could mitigate for reductions in YRDP generation. Accordingly, Alternative 2 impacts for the YRDP would be **potentially significant and unavoidable**.

YRDP Impact EN-FAlt2-2: Change in Monthly Generation Capacity from YRDP Operations

The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its planned flows. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse would reduce the amount of RA the YRDP can provide. Table 7.5-32 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses for Alternative 2 relative to the Future Baseline.

Table 7.5-32. Comparison of Average Monthly Generation Capacity for Alternative 2 Relative to Future Baseline.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Future Baseline	Alternative 2	(MW)	(%)
October	301	294	-7	-2%
November	290	283	-7	-3%
December	285	281	-4	-1%
January	280	285	6	2%
February	291	298	7	3%
March	323	321	-2	-1%
April	340	349	8	2%
May	359	358	-1	0%
June	359	351	-8	-2%
July	342	329	-13	-4%
August	328	315	-13	-4%
September	308	300	-8	-2%

Key: MW = Megawatt

There are relatively small changes in generation capacity all months except for January, February, April, and May under Alternative 2 relative to the Future Baselines, and average generation capacity reductions are less than 5% of the Future Baseline capacity. Accordingly, YRDP operational impacts under Alternative 2 would be **less than significant**.

YRDP Impact EN-FAlt2-3: Reduction in Generation-Related Revenue from YRDP Operations

While the New Colgate Powerhouse's flexible operations allow it to target hours of high energy demand and the associated higher economic value, the Narrows 2 Powerhouse runs consistently through every hour of a day. The New Colgate Powerhouse's operational flexibility allows it to adjust generation to minimize the economic effects of reductions in generation shown in YRDP operations under Alternative 2 include all of the elements described for the Proposed Projects plus the unimpaired flow requirements. The increased Middle Yuba River flow requirements will preclude diversion through the Lohman Ridge and Camptonville tunnels into New Bullards Bar Reservoir. Elements of Alternative 2 will contribute to a general reduction in flows through the New Colgate Powerhouse and a reduction in generation, particularly in the summer, but the higher unimpaired flow requirements will result in higher spring releases when there is already ample generation from renewable resources available. There will be an accompanying shift to higher

spring flows from the Narrows 2 Powerhouse and higher frequency of spills over Englebright Dam, resulting in higher spring generation at Narrows 2 Powerhouse, but less overall generation. Table 7.5-31shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse. Table 7.5-33 shows a comparison of the average annual generation revenue for Alternative 2 relative to the Future Baseline.

Table 7.5-33. Comparison of Average Annual Generation Revenue for Alternative 2 Relative to Future Baseline.

	Generation Revenue ($1M)		Change in Revenue	
	Future Baseline	Alternative 2	(1M$)	(%)
New Colgate PH	59.4	54.7	-4.7	-8%
Narrows 2 PH	5.9	6.3	0.4	6%
Total YRDP	65.3	61.0	-4.4	-7%

Key: $1M = Millions of Dollars

Reduction in average annual generation-related revenue from the YRDP would be reduced by an average of 7%. A reduction of this magnitude would result in substantial year-to-year uncertainty in revenue stability and would challenge Yuba Water's ability to reliably fund its programs. Accordingly, YRDP operational impacts under Alternative 2 impacts would **be potentially significant and unavoidable**.

Narrows Impact EN-FAlt2-1: Change in Monthly Generation from Narrows 1 Operations

Due to its ability to provide renewable energy, the Narrows 1 Powerhouse is almost always running at full capacity. There are some periods when releases would be slightly changed due to differences in Englebright Dam releases, particularly when desired Englebright Dam releases are in the 900 to 1,080 cfs and the Narrows 1 Powerhouse is providing flows above the Narrows 2 Powerhouse minimum capacity. Since Alternative 2 decreases summer flows, there are more periods when Englebright Dam releases are in this range, and as a result, there will be reductions in Narrows Project generation, Table 7.5-34 shows a comparison of monthly generation for Alternative 2 relative to the Future Baseline.

Table 7.5-34. Comparison of Average Monthly Generation for Alternative 2 Relative to Future Baseline.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Future Baseline	Alternative 2	(GWh)	(%)
July	8.3	7.2	-1.1	-13%
August	7.9	7.1	-0.8	-11%
September	7.2	7.3	0.1	1%
October	8.2	8.1	-0.1	-1%

Key: MW = Megawatt

Alternative 2 would result in large reductions in average monthly generation in several months, particularly in July and August when reductions in generation would exceed 10%. This degree of reduced generation, particularly in the summer, would represent a substantial risk to California's renewable energy goals. Other generation resources are typically already utilized during high-

demand periods, so it is not reasonable to assume other renewable energy resources could mitigate for reductions in YRDP generation. Accordingly, Narrows 1 operational impacts under Alternative 2 would be **potentially significant and unavoidable**.

Narrows Impact EN-FAlt2-2: Change in Monthly Generation Capacity from Narrows 1 Operations

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Under Alternative 2, there will be notable reductions in planned flows for the Narrows 1 Powerhouse under the Alternative 2, relative to the Future Baseline, in the summer. There are associated reductions in generation capacity in the summer. Table 7.5-35 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse for Alternative 2 relative to the Future Baseline.

Table 7.5-35. Comparison of Average Monthly Generation Capacity for Alternative 2 Relative to Future Baseline.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Future Baseline	Alternative 2	(MW)	(%)
October	11.0	10.8	-0.1	-1%
November	11.0	10.9	-0.1	-1%
December	11.3	11.1	-0.1	-1%
January	11.3	11.4	0.1	1%
February	11.4	11.4	0.0	0%
March	11.5	11.5	0.0	0%
April	11.3	11.5	0.2	2%
May	11.5	11.5	0.1	1%
June	7.9	7.9	0.0	0%
July	10.0	9.6	-0.4	-4%
August	11.1	10.5	-0.6	-5%
September	10.5	10.8	0.3	3%

Key: MW = Megawatt

Alternative 2 would reduce the average monthly generation capacity at Narrows 1 Powerhouse by as much as 5% in August. There are average monthly reductions in capacity in October, November, December, July, and August, but average generation capacity reductions are less than 5% of the Future Baseline capacity. Accordingly, Narrows 1 operational impacts under Alternative 2 would be **less than significant**.

Narrows Impact EN-FAlt2-3: Reduction in Generation-Related Revenue from Narrows 1 Operations

There are decreases in Narrows 1 Powerhouse generation; the associated changes in generation shown in Table 7.5-34 do not result in a notable change in Narrows Project generation revenue. Table 7.5-36 shows a comparison of Narrows Project generation revenue for Alternative 2 relative to the Future Baseline.

Table 7.5-36. Comparison of Average Annual Generation Revenue for Alternative 2 Relative to Future Baseline.

	Generation Revenue ($1M)		Change in Revenue	
	Future Baseline	Alternative 2	(1M$)	(%)
Narrows 1 PH	11.2	11.2	-0.1	-1%

Key: $1M = Millions of Dollars

There are small changes in annual generation revenue under Alternative 2 relative to the Future Baselines, but average generation revenue reductions do not exceed 5% of the Future Baseline revenue. Accordingly, Narrows 1 operational impacts under Alternative 2 would be **less than significant**.

7.5.7 No Project Alternative compared to the Existing Condition

7.5.7.1 Energy Production

YRDP Impact EN-NP-1: Change in Monthly Generation from YRDP Operations

YRDP operations under the No Project Alternative would result in an elimination of generation from the YRDP. None of the facilities would provide any generation. Table 7.5-37 shows a comparison of combined generation from the New Colgate Powerhouse, Narrows 2 Powerhouse and Minimum Flow Powerhouse.

Table 7.5-37. Comparison of Average Monthly Generation for No Project Alternative Relative to Existing Condition.

Month	YRDP Generation (GWh)		Change in YRDP Generation from Basis of Comparison	
	Existing Condition	No Project Alternative	(GWh)	(%)
October	51.8	0.0	-51.8	-100%
November	49.5	0.0	-49.5	-100%
December	64.0	0.0	-64.0	-100%
January	84.5	0.0	-84.5	-100%
February	96.6	0.0	-96.6	-100%
March	151.7	0.0	-151.7	-100%
April	132.6	0.0	-132.6	-100%
May	174.3	0.0	-174.3	-100%
June	176.9	0.0	-176.9	-100%
July	155.5	0.0	-155.5	-100%
August	134.9	0.0	-134.9	-100%
September	63.7	0.0	-63.7	-100%

Key: MW = Megawatt

No Project Alternative would result in complete elimination of YRDP generation. This would represent a substantial risk to CAISO grid stability. Accordingly, YRDP operational impacts under the No Project Alternative would be **potentially significant and unavoidable**.

YRDP Impact EN-NP-2: Change in Monthly Generation Capacity from YRDP Operations

The New Colgate Powerhouse's generation capacity is based on storage in New Bullards Bar Reservoir and the Narrows 2 Powerhouse's capacity is based on its planned flows. A reduction in New Bullards Bar Reservoir storage and a reduction in releases from the Narrows 2 Powerhouse would reduce the amount of RA the YRDP can provide. Table 7.5-38 shows a comparison of generation capacity from the New Colgate and Narrows 2 powerhouses for the No Project Alternative relative to the Existing Condition.

Table 7.5-38. Comparison of Average Monthly Generation Capacity for No Project Alternative Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	No Project Alternative	(MW)	(%)
October	299	0	-299	-100%
November	289	0	-289	-100%
December	282	0	-282	-100%
January	280	0	-280	-100%
February	285	0	-285	-100%
March	315	0	-315	-100%
April	339	0	-339	-100%
May	358	0	-358	-100%
June	359	0	-359	-100%
July	340	0	-340	-100%
August	326	0	-326	-100%
September	307	0	-307	-100%

Key: MW = Megawatt

The No Project Alternative would result in a complete loss of generation capacity from the YRDP. This would represent a risk to grid stability due to the elimination of the YRDP's RA services. Accordingly, YRDP operational impacts under the No Project Alternative would be **potentially significant and unavoidable**.

YRDP Impact EN-NP-3: Reduction in Generation-Related Revenue from YRDP Operations

The No Project Alternative would result in a complete loss of generation-related revenue for Yuba Water. Table 7.5-39 shows a comparison of the average annual generation revenue for the No Project Alternative relative to the Existing Condition.

Table 7.5-39. Comparison of Average Annual Generation Revenue for No Project Alternative Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	No Project Alternative	(1M$)	(%)
New Colgate PH	59.0	0.0	-59.0	-100%
Narrows 2 PH	5.7	0.0	-5.7	-100%
Total YRDP	64.8	0.0	-64.8	-100%

Key: $1M = Millions of Dollars

Elimination of average annual generation-related revenue from the YRDP would result in a loss of Yuba Water's ability to fund its programs. Accordingly, YRDP operational impacts under the No Project Alternative would **be potentially significant and unavoidable**.

Narrows Impact EN-NP-1: Change in Monthly Generation from Narrows 1 Operations

The No Project Alternative would result in the loss of all generation from the Narrows 1 Powerhouse. Table 7.5-40 shows a comparison of monthly generation for the No Project Alternative and Existing Condition.

Table 7.5-40 Comparison of Average Monthly Generation for No Project Alternative Relative to Existing Condition.

Month	Narrows Project Generation (GWh)		Change in Narrows Project Generation from Basis of Comparison	
	Existing Condition	No Project Alternative	(GWh)	(%)
July	8.2	0.0	-8.2	-100%
August	7.9	0.0	-7.9	-100%
September	7.2	0.0	-7.2	-100%
October	8.2	0.0	-8.2	-100%

Key: MW = Megawatt

No Project Alternative would result in total elimination of generation from the Narrows Project. This degree of reduced generation would represent a substantial risk to CAISO grid stability and, as a renewable energy facility, loss of Narrows 1 Powerhouse generation would interfere with California's green energy goals. Accordingly, No Project Alternative impacts for the Narrows Project would be **potentially significant and unavoidable**.

Narrows Impact EN-NP-2: Change in Monthly Generation Capacity from Narrows 1 Operations

The Narrows 1 Powerhouse's ability to provide capacity is based on its planned flows. Under No Project Alternative, there will be releases through the Narrows 1 Powerhouse. There would be a resulting complete loss of generation capacity. Table 7.5-41 shows a comparison of average monthly generation capacity for the Narrows 1 Powerhouse for the No Project Alternative relative to the Existing Condition.

Table 7.5-41. Comparison of Average Monthly Generation Capacity for No Project Alternative Relative to Existing Condition.

Month	Generation Capacity (MW)		Change in Generation Capacity	
	Existing Condition	No Project Alternative	(MW)	(%)
October	10.9	0	-10.9	-100%
November	10.9	0	-10.9	-100%
December	11.2	0	-11.2	-100%
January	11.3	0	-11.3	-100%
February	11.4	0	-11.4	-100%
March	11.5	0	-11.5	-100%
April	11.3	0	-11.3	-100%
May	11.5	0	-11.5	-100%
June	7.8	0	-7.8	-100%
July	10.1	0	-10.1	-100%
August	11.1	0	-11.1	-100%
September	10.5	0	-10.5	-100%

Key: MW = Megawatt

The No Project Alternative would result in a complete loss of generation capacity from the Narrows Project. This would represent a risk to grid stability due to the elimination of the Narrows 1 Powerhouse's RA services. Accordingly, Narrows 1 operational impacts under the No Project Alternative would be **potentially significant and unavoidable**.

Narrows Impact EN-NP-3: Reduction in Generation-Related Revenue from Narrows 1 Operations

The No Project Alternative would eliminate generation-based revenue from the Narrows Project. Table 7.5-42 shows a comparison of Narrows Project generation revenue for the No Project Alternative and Existing Condition.

Table 7.5-42. Comparison of Average Monthly Generation Revenue for No Project Alternative Relative to Existing Condition.

	Generation Revenue ($1M)		Change in Revenue	
	Existing Condition	No Project Alternative	(1M$)	(%)
Narrows 1 PH	11.2	0.0	-11.2	-100%

Key: $1M = Millions of Dollars

Elimination of average annual generation-related revenue from the Narrows Project would result in a loss of Yuba Water's ability to fund its programs. Accordingly, Narrows 1 operational impacts under the No Project Alternative would **be potentially significant and unavoidable**.

7.5.7.2 Energy Consumption

YRDP Impacts EN-NP-4: YRDP Energy Consumption from YRDP Construction

No YRDP construction would occur under the No Project Alternative. Accordingly, there would be **no impacts** related to wasteful, inefficient, or unnecessary energy consumption (EN-NP-4) or conflicts with renewable energy or energy efficiency plans (EN-NP-6) from construction activities.

YRDP Impact EN-NP-5: YRDP Energy Consumption from YRDP Operations

Under the No Project Alternative, hydropower generation would cease but other existing YRDP operations for flood management and water supply purposes would continue. No new facilities requiring additional energy would be constructed. Accordingly, YRDP operations under the No Project Alternative would not result in significantly more demands for energy, let alone wasteful, inefficient, or unnecessary energy consumption. Therefore, **no impact** would occur.

YRDP Impacts EN-NP-6: YRDP Conflicts with Renewable Energy or Energy Efficiency Plans from YRDP Construction

No YRDP construction would occur under the No Project Alternative. Accordingly, there would be **no impacts** related to conflicts with renewable energy or energy efficiency plans from construction activities.

YRDP Impact EN-NP-7: YRDP Operational Conflicts with Renewable Energy or Energy Efficiency Plans

Under the No Project Alternative, hydropower generation would cease but other existing YRDP operations for flood management and water supply purposes would continue. The complete loss of YRDP hydropower generation under the No Project Alternative would mean the loss of electricity available to the grid.

It is possible that the loss could be compensated for with new electricity sources, increased production from existing sources, and/or electricity imported from outside California. Potential sources that could compensate for this loss include renewable resources, which would be consistent with the objectives of the Renewables Portfolio Standard and associated legislation. However, it cannot be determined if this loss could be made up entirely by renewable sources, and whether electricity from these sources can be provided in a timely manner. Other sources of electricity may use fossil fuels, which would conflict with the Renewables Portfolio Standard. Chapter 15, Air Quality, discusses the potential impacts of using fossil fuels for power in more detail. Given the uncertainty as to how this potential loss of electricity would be compensated for, impacts related to potential conflicts with renewable energy or energy efficiency plans are considered **potentially significant and unavoidable**.

Narrows Impact EN-NP-4: Narrows Project Energy Consumption

Under the No Project Alternative, hydropower generation would cease but other existing Narrows Project operations for flood management and water supply purposes would continue. No new facilities requiring additional energy would be constructed. Accordingly, Narrows Project

operations under the No Project Alternative would not result in significantly more demands for energy, let alone wasteful, inefficient, or unnecessary energy consumption. Therefore, **no impact** would occur.

Narrows Impact EN-NP-5: Narrows Project Conflicts with Renewable Energy or Energy Efficiency Plans

Under the No Project Alternative, hydropower generation would cease but other existing Narrows Project operations for flood management and water supply purposes would continue. The complete loss of Narrows Project hydropower generation under the No Project Alternative would mean the loss of electricity available to the grid. As discussed under YRDP Impact EN-NP-7, the loss could be compensated for with electricity from renewable sources. However, other sources may also be used, and it is not known if the loss can be entirely compensated for with renewable sources. Therefore, the compensation for this loss could conflict with applicable renewable energy or energy efficiency plans, especially the Renewables Portfolio Standard. Because of this, the impact is considered **potentially significant and unavoidable**.

7.6 Cumulative Impact Assessment

Hydrologic modeling was used to evaluate the potential cumulative effects of the Proposed Projects and alternatives in combination with other likely changes in operations on energy generation. The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. To the extent feasible, potential cumulative impacts on resources dependent on hydrology or water supply (e.g., reservoir surface elevation) are analyzed quantitatively.

As described in Chapter 4, several projects considered as part of the cumulative condition cannot be accurately characterized for hydrologic modeling purposes at this time, either due to the nature of the particular project or because specific operations details are only in the preliminary phases of development. Therefore, these projects are evaluated qualitatively. Only those projects that could affect power generation are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to regional power production and energy consumption that also could be affected by the Proposed Projects or alternatives (see Chapter 4). For this reason, only the limited numbers of projects with the potential to cumulatively impact power production and energy consumption are specifically considered qualitatively in the cumulative impacts analysis for power production and energy consumption resources:

- FERC Hydropower Projects in the Yuba River Watershed
    - South Feather Power Project (FERC Project 2088-068) Relicensing
    - Yuba-Bear Hydroelectric Project (Yuba-Bear Project) (FERC Project No. 2266) Relicensing,
    - Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310)
    - Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing
- Flood Control Projects
    - New Bullards Bar Dam ARC Spillway Project
    - USACE NBB Dam and Reservoir Water Control Manual (WCM) Update
- Ecosystem Restoration and Fisheries Improvement Projects
    - Bay-Delta Water Quality Control Plan Update – HR & L

7.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

Under the Cumulative Condition, the YRDP Relicensing will change YRDP operations which influences reservoir storages and flows from the New Colgate and Narrows 2 powerhouses. Narrows Project operations under the Cumulative Condition will remain the same as under the Existing Condition. Implementation of upstream relicensing projects and ARC Spillway operations have been considered through hydrologic modeling. All other projects considered in the power production and energy consumption cumulative assessment are addressed qualitatively.

Relicensing of the Yuba-Bear and Drum-Spaulding projects could reduce generation of those projects. When combined with changes in YRDP and Narrows Project generation, there would be a general reduction in generation.

The Bay-Delta Water Quality Control Plan Update – HR&L project has the potential to require increased releases from New Bullards Bar Reservoir during the spring months of above normal, below normal, and dry years, but would only occur when New Bullards Bar Reservoir storage would be forecasted to have an end-of-September storage greater than 600,000 acre-feet. In the year of a HR&L release, there would be an increase in springtime generation from the New Colgate Powerhouse and a reduction in New Colgate Powerhouse capacity due to the reduced New Bullards Bar Reservoir storage, but overall changes would not likely be substantive. Ending a year with reduced storage due to the HR&L program could have an effect on YRDP generation and capacity in the following year if the following year was extremely dry, but entering the winter with slightly lower storage could result in fewer spills, which could allow the New Colgate Powerhouse to run more in the winter.

Flood-management-focused projects like the ARC Spillway Project and WCM Update would not have a cumulatively significant effect on energy production. The ARC Spillway would allow New Bullards Bar Dam to release more flow earlier in a storm, which could extend the period of New Colgate Powerhouse shutdown. Construction of the ARC Spillway or any levee modifications would be scheduled and include BMPs to minimize potential effects on YRDP or Narrows Project operations, particularly water supply and flood management operations.

As explained above, construction activities under the Proposed YRDP Project would not impact any of the power production indicators and therefore would not contribute to potential cumulative power production impacts. Additionally, as explained above, none of the construction or operational activities that would occur under the Proposed Projects would result in significant impacts related to wasteful, inefficient, or unnecessary energy consumption or conflicts with renewable energy or energy efficiency plans. These types of impacts are highly project-dependent and generally would not be expected to combine with similar impacts from other past, present, and future projects to create a significant cumulative impact.

For these reasons, under the Cumulative Condition, including the Proposed Projects, there would not be a significant impact to power production or energy consumption.

7.6.1.1 Proposed Projects Cumulative Condition Impact Determinations

YRDP Cumulative Impact EN-PP-1: YRDP impacts to power production and energy consumption

Under the cumulative condition, including the Proposed Projects, the cumulative impact to power production and energy consumption would be less than significant. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** to power production and energy consumption.

Narrows Cumulative Impact EN-PP-1: Narrows Project impacts to power production and energy consumption

Under the cumulative condition, including the Proposed Projects, the cumulative impact to power production and energy consumption would be less than significant. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** to power production and energy consumption.

7.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Construction and non-flow operational activities planned under Alternative 1 do not differ from those planned under the Proposed Projects, and would therefore have the same associated incremental contribution to the cumulative condition discussed in Section 7.6.1 above. The Alternative 1 Cumulative Condition includes the same cumulative past, present, and future projects identified in Section 7.6 above, which would have the same associated contributions to the cumulative condition discussed in Section 7.6.1 above.

Changes in operations of the YRDP under the Cumulative Condition with Alternative 1 scenario relative to the Existing Condition scenario are essentially equivalent or very similar to those described for the Alternative 1 scenario vs Existing Condition scenario. Implementation of changes in flows in the Yuba-Bear and Drum-Spaulding relicensing projects in YRDP reaches and in reaches upstream of the YRDP are reflected in the previously analyzed Alternative 1 and Existing Condition comparison. Overall, power production would not significantly change under the Cumulative Condition, including Alternative 1, relative to the Existing Condition. For these reasons, under the Cumulative Condition, including Alternative 1, there would **not be a significant impact** on power production or energy consumption.

7.6.2.1 Alternative 1 Cumulative Condition Impact Determinations

YRDP Cumulative Impact EN-Alt1-1: YRDP impacts to power production and energy consumption

Under the cumulative condition, including Alternative 1, the cumulative impact to power production and energy consumption would be less than significant. Accordingly, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** to power production and energy consumption.

Narrows Cumulative Impact EN-Alt1-1: Narrows Project impacts to power production and energy consumption

Under the cumulative condition, including Alternative 1, the cumulative impact to power production and energy consumption would be less than significant. Accordingly, Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** to power production and energy consumption.

7.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Construction and non-flow operational activities planned under Alternative 2 do not differ from those planned under the Proposed Projects scenario and would therefore have the same associated incremental contribution to the cumulative condition discussed in Section 7.6.1 above.

Changes in operations of the YRDP under the Alternative 2 Cumulative Condition scenario relative to the Existing Condition scenario are essentially equivalent or very similar to those described for the Alternative 2 scenario vs Existing Condition scenario. Implementation of changes in flow requirements in YRDP reaches and in reaches upstream of the YRDP are reflected in the previously analyzed Alternative 2 vs Existing Condition comparison. Overall, power production would significantly decrease under the Cumulative Condition, including Alternative 2, relative to the Existing Condition.

Since Alternative 2 represents an alternative to the HR&L program, they would not both be implemented. However, other projects considered under Cumulative Conditions for power production and energy consumption resources could still be implemented.

If Alternative 2 were implemented for the Yuba River, it is likely it would be similarly implemented on other tributaries throughout the state. The combination of Alternative 2 with similar operations on other tributaries would likely result in widespread reductions in power production throughout the state, increasing the potential impact on the CAISO grid.

Alternative 2 would result in potentially significant impacts on generation from the YRDP. Those same impacts would be expected to remain under Cumulative Conditions (Alternative 2), and inclusion of cumulative projects described above and the implementation of an Alternative 2-like requirements throughout the state would increase the potentially significant impacts. For these reasons, under the Cumulative Condition, including Alternative 2, the cumulative impact to power production and energy resources would be significant.

7.6.3.1 Alternative 2 Cumulative Condition Impact Determinations

YRDP Cumulative Impact EN-Alt2-1: YRDP impacts to power production and energy consumption

Under the cumulative condition, including Alternative 2, the cumulative impact to power production and energy consumption resources would be significant. For the same reasons that the individual impacts of YRDP operations under Alternative 2 would be potentially significant and unavoidable, the incremental contribution of those operations to the cumulative impact would be cumulatively considerable. As explained above, there is no potential mitigation for the potential cumulative impacts. Accordingly, YRDP activities under Alternative 2 would result in **a significant and unavoidable cumulative impact** to power production and energy consumption.

Narrows Cumulative Impact EN-Alt2-1: Narrows Project impacts to power production and energy consumption

Under the cumulative condition, including Alternative 2, the cumulative impact to power production and energy consumption resources would be significant. For the same reasons that the individual impacts of Narrows Project operations under Alternative 2 would be potentially significant and unavoidable, the incremental contribution of those operations to the cumulative impact would be cumulatively considerable. As explained above, there is no potential mitigation for the potential cumulative impacts. Therefore, the Narrows Project operations under Alternative 2 would result in a **significant and unavoidable cumulative impact** to power production and energy consumption.

7.6.4 No Project Alternative Cumulative Condition compared to the Existing Condition

Under the No Project Alternative Cumulative Condition there would be a complete loss of generation from the YRDP and Narrows Project. At the same time, the new FERC licenses for the Yuba-Bear and Drum-Spaulding projects would result in reduced power production relative to the Existing Condition. None of the other projects included in the cumulative condition analysis include generation, so they would not have a cumulative effect on generation when combined with the No Project Alternative. With the loss of generation of the YRDP and Narrows Project, there would be a loss of total energy generation or generation capacity, and consequently generation-

related revenues, that would exceed the significance thresholds for power generation established in Section 7.4.3.1 above.

Accordingly, under the Cumulative Condition, including the No Project Alternative, the cumulative impact to power production and energy consumption would be significant.

7.6.4.1 No Project Alternative Cumulative Condition Impact Determinations

YRDP Cumulative Impact EN-NP-1: YRDP impacts to power production and energy consumption

Under the cumulative condition, including the No Project Alternative, the cumulative impact to power production and energy consumption resources would cumulatively significant. For the same reasons that the individual impacts of YRDP operations under the No Project Alternative would be potentially significant and unavoidable, the incremental contribution of those operations to the cumulative impact would be cumulatively considerable. As explained above, there is no potential mitigation for the potential cumulative impacts; therefore, YRDP activities under the No Project Alternative would result in a **significant and unavoidable cumulative impact** to power production and energy consumption.

Narrows Cumulative Impact EN-NP-1: Narrows Project impacts to power production and energy consumption

Under the cumulative condition, including the No Project Alternative, the cumulative impact to power production and energy consumption would cumulatively significant. For the same reasons that the individual impacts of Narrows Project operations under the No Project Alternative would be potentially significant and unavoidable, the incremental contribution of those operations to the cumulative impact would be cumulatively considerable. As explained above, there is no potential mitigation for the potential cumulative impacts; therefore, the Narrows Project operations under the No Project Alternative would result in a **significant and unavoidable cumulative impact** to power production and energy consumption.

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CHAPTER 8

SURFACE WATER QUALITY

8.1 Introduction

This chapter describes the existing surface water quality conditions in the geographic extent of the environmental setting (i.e., Project Area), identifies relevant regulations, plans and policies, and evaluates potential impacts on surface water quality in Project Area waterbodies that could result from construction and O&M of the Proposed Projects and alternatives.

8.2 Environmental Setting

This section describes existing surface water quality conditions within the Project Area to inform analyses of potential impacts of the Proposed Projects and alternatives.

8.2.1 Geographic Extent of the Environmental Setting

8.2.1.1 Yuba River Development Project

The geographic area that could be affected by the YRDP and that has been identified for this DEIR includes the following Yuba River watershed waterbodies (refer to Figure 4.3-1 in Chapter 4, "Framework for the Environmental Analysis").

- New Bullards Bar Reservoir.
- North Yuba River below New Bullards Bar Dam to its confluence with the Middle Yuba River.
- Log Cabin Diversion Dam Impoundment on Oregon Creek.
- Oregon Creek below Log Cabin Diversion Dam downstream to its confluence with the Middle Yuba River.
- Our House Diversion Dam Impoundment on the Middle Yuba River.
- Middle Yuba River below Our House Diversion Dam to its confluence with the North Yuba River.
- Upper Yuba River (confluence of North and Middle Yuba rivers downstream to Englebright Reservoir).
- Englebright Reservoir.
- Lower Yuba River below Englebright Dam to its confluence with the Feather River.

In addition, due to the potential for indirect impacts or indirect cumulative impacts that may occur as a result of potential YB/DS operational changes associated with the provision of 15.6 TAF under Alternative 1 (refer to Chapter 4), the following additional areas are included in the surface water quality Project Area.

- Jackson Meadows Reservoir.
- Middle Yuba River below Jackson Meadows Dam and Milton Diversion Dam to the Our House Diversion Dam Impoundment.
- Bowman Lake.

- Canyon Creek below Bowman Lake and Bowman-Spaulding Diversion Dam to its confluence with the South Yuba River.
- Fordyce Lake.
- Fordyce Creek from Fordyce Lake to Lake Spaulding.
- Lake Spaulding.
- South Yuba River below Lake Spaulding to Englebright Reservoir.

8.2.1.2 Narrows Project

The geographic area that could be affected by the Narrows Project that has been identified for this DEIR includes the lower Yuba River below Englebright Dam to its confluence with the lower Feather River.

8.2.1.3 Areas Downstream of the Lower Yuba River

Lower Yuba River outflows and water temperatures have the potential to influence flow and water temperature-related conditions in the Feather River downstream of the Yuba River, the Sacramento River downstream of the Feather River, and the Delta. Therefore, these areas are considered in the surface water quality Project Area.

8.2.2 Yuba River Watershed

Existing water quality conditions in Project Area waterbodies in the Yuba River watershed have been characterized extensively in other documents prepared in support of Yuba Water projects and FERC relicensing applications. FERC's (2019) FEIS for the YRDP hydropower relicensing effort describes existing water quality conditions in the lower Yuba River. The water quality characterization in the FEIS[1] is based largely on information provided in Yuba Water's YRDP relicensing study reports[2] and YRDP AFLA[3] (Yuba Water 2017). These documents relied on water quality data collected by Yuba Water in 2009 and 2012, which document water quality conditions from the upper Yuba River watershed to the lower Yuba River (Yuba Water 2010a[4], 2013[5]). Yuba Water's (2023) FLA[6] for the Narrows Project also provides information regarding lower Yuba River water quality relevant to the Narrows FERC relicensing process. These documents are incorporated herein by reference and available for review at Yuba Water's office located at 1220 F Street, Marysville, CA 95901. The major points regarding water quality conditions in the Project Area are briefly summarized below.

In general, water quality of Project Area waterbodies in the Yuba River watershed is high within and between seasons. Most analyte concentrations have been at non-detect levels or just above the analytical reporting limit. Waters are generally clear, with an average turbidity less than 36 Nephelometric Turbidity Units (NTU) and dissolved oxygen concentrations near or at saturation levels. Alkalinity is generally low (<100 milligrams per liter [mg/L] as $CaCO_3$) and pH is near

[1] https://www.yubawater.org/DocumentCenter/View/4052/19JAN---Final-Environmental-Impact-Statement---PDF
[2] https://www.yubawater.org/DocumentCenter/Index/31
[3] https://www.yubawater.org/DocumentCenter/Index/31
[4] https://www.yubawater.org/DocumentCenter/Index/31
[5] https://www.yubawater.org/DocumentCenter/View/1297/TM-2-3-PDF
[6] https://www.yubawater.org/357/Narrows-Relicensing

neutral. Fecal coliform bacteria are not found near potential sources. Nutrient levels are low with nitrogen compound concentrations less than 0.2 mg/L as nitrogen (N), ortho-phosphate concentrations less than 0.10 mg/L as phosphorus, and total phosphorous concentrations generally less than 1 mg/L.

Low nutrient concentrations and high water clarity, driven largely by lack of development in the watershed, indicate that New Bullards Bar Reservoir and Englebright Reservoir are mesotrophic to oligotrophic, consistent with other lower elevation Sierra Nevada reservoirs. Water quality conditions remain generally consistent from upstream to downstream of the reservoirs.

Additional details regarding water quality conditions in Project Area waterbodies are provided in the impact discussions in Section 8.5 to support waterbody-specific analyses.

Beneficial uses of the Yuba River, as designated in the CVRWQCB's "Water Quality Control Plan for the Sacramento and the San Joaquin River Basins (Basin Plan)," are presented in Table 8.2-1 (CVRWQCB 2019: p. 2-9). The beneficial uses of the other Project Area waterbodies in the Yuba River watershed are not specifically designated in the Basin Plan. The Basin Plan states, "The beneficial uses of any specifically identified water body generally apply to its tributary streams…" (CVRWQCB 2019: p. 2-3). Thus, the beneficial uses of the Project Area waterbodies in the upper Yuba River watershed are considered to be the same as those listed in Table 8.2-1 for "sources to Englebright Reservoir."

Table 8.2-1. Beneficial Uses of Project Area Waterbodies in the Yuba River Watershed.

Beneficial Use Designation	Sources to Englebright Reservoir [a]	Lower Yuba River (Englebright Dam to Feather River)
Municipal and Domestic Supply	X	--
Irrigation Watering	X	X
Stock Watering	X	X
Power Generation	X	X
Contact Recreation	X	X
Canoeing and Rafting Recreation	X	X
Other Non-contact Recreation	X	X
Warm Freshwater Habitat	--	X
Cold Freshwater Habitat	X	X
Warm Migration Habitat	--	X
Cold Migration Habitat	--	X
Warm Spawning Habitat	--	X
Cold Spawning Habitat	X	X
Wildlife Habitat	X	X

Source: CVRWQCB 2019

[a] "Sources to Englebright" includes the North Yuba River, Middle Yuba River, and South Yuba River.

The SWRCB has determined that several Project Area waterbodies have constituent impairments and included those waterbodies on its CWA Section 303(d) list (SWRCB 2024). Table 8.2-2 provides a summary of the CWA Section 303(d) listings for Project Area waterbodies. Project Area waterbodies not included in Table 8.2-2 are not on the CWA Section 303(d) list of impaired

waterbodies.

Table 8.2-2. CWA Section 303(d)-Listed Project Area Waterbodies in the Yuba River Watershed, Constituent Impairment, and Basis for Listing.

Waterbody / Reach	Constituent Impairment	Basis for Listing	Potential Source
New Bullards Bar Reservoir	Mercury	Exceeds statewide prey fish objective and statewide sport fish objective	Unknown
Englebright Reservoir	Mercury	Exceeds statewide sport fish objective	Unknown
North Yuba River	Mercury	Exceeds statewide sport fish objective	Unknown
Yuba River (confluence of North and Middle Yuba Rivers to Englebright Reservoir)	Chromium	Exceeds objective based on drinking water primary MCL	Unknown
	Mercury	Exceeds statewide sport fish objective	Unknown
Oregon Creek (Yuba and Sierra Counties)	Copper	Exceeds CTR chronic criterion for protection of freshwater aquatic life	Unknown
	Iron	Exceeds National Recommended Water Quality Criterion for chronic protection of freshwater aquatic life	Unknown
Yuba River (Englebright Dam to lower Feather River)	Copper	Exceeds CTR chronic criterion for protection of freshwater aquatic life	Unknown
	Mercury	Exceeds CTR criterion for protection of human health and statewide sport fish objective	Unknown
Lake Spaulding	Mercury	Exceeds statewide sport fish objective	Unknown
South Yuba River (Lake Spaulding to Englebright Reservoir)	Chromium	Exceeds objective based on drinking water primary MCL	Unknown
	Copper	Exceeds CTR chronic criterion for protection of freshwater aquatic life	Unknown
	Iron	Exceeds National Recommended Water Quality Criterion for chronic protection of freshwater aquatic life	Unknown
	Mercury	Exceeds statewide sport fish objective	Unknown
	Temperature	Exceeds thresholds for steelhead, salmon, and trout	Unknown

Source: SWRCB 2024
CTR = California Toxics Rule; MCL = maximum contaminant level

8.2.3 Areas Downstream of the Lower Yuba River

The lower Yuba River is a tributary to the lower Feather River. The lower Feather River begins at Oroville Dam, which is owned and operated by DWR and is part of the SWP. Water quality of the lower Feather River is influenced by agricultural and municipal land and water use in the watershed, but is generally suitable for the designated beneficial uses, which are listed in Table 8.2-3. The SWRCB has identified the Feather River from Oroville Dam to the Sacramento River on its CWA Section 303(d) list as being impaired for mercury, polychlorinated biphenyls, and unknown toxicity (SWRCB 2024).

Table 8.2-3. Beneficial Uses of Waterbodies in the Lower Feather River, Sacramento River, and Sacramento-San Joaquin Delta.

Beneficial Use Designation	Lower Feather River (Fish Barrier Dam to Sacramento River)	Sacramento River (Colusa Basin Drain to I Street Bridge)	Sacramento-San Joaquin Delta
Municipal and Domestic Supply	X	X	X
Irrigation Watering	X	X	X
Stock Watering	--	--	X
Industrial Process Supply	--	--	X
Industrial Service Supply	--	--	X
Contact Recreation	X	X	X
Canoeing and Rafting Recreation	X	X	--
Other Non-contact Recreation	X	X	X
Warm Freshwater Habitat	X	X	X
Cold Freshwater Habitat	X	X	X
Warm Migration Habitat	X	X	X
Cold Migration Habitat	X	X	X
Warm Spawning Habitat	X	X	X
Cold Spawning Habitat	X	X	--
Wildlife Habitat	X	X	X
Navigation	--	X	X

Source: CVRWQCB 2019

The lower Feather River is tributary to the lower Sacramento River. The lower Sacramento River begins at Shasta Dam, which is owned and operated by Reclamation and is part of the CVP. The Sacramento River also is generally characterized as having good water quality that supports its beneficial uses, which are listed in Table 8.2-3. The SWRCB has listed the Sacramento River from Knights Landing to the Delta on its CWA Section 303(d) list as impaired for chlordane, DDT, dieldrin, mercury, polychlorinated biphenyls, temperature, and unknown toxicity (SWRCB 2024).

The lower Sacramento River is a tributary to the Delta. Delta water quality is generally suitable to support its beneficial uses, which are listed in Table 8.2-3. Existing water quality constituents of concern in the Delta can be categorized broadly as salinity, metals, pesticides, nutrient enrichment and associated eutrophication, turbidity, and organic carbon. The Sacramento River is the dominant source of freshwater inflow to the Delta, contributing about 74 percent of total inflow, followed by the San Joaquin River (14%), Yolo Bypass (8%), and the Cosumnes, Mokelumne, and Calaveras rivers, referred to as the "eastside tributaries" (4%) (Delta Stewardship Council 2018). Certain regions of the Delta are included on the SWRCB's CWA Section 303(d) list for various constituent impairments, including mercury, electrical conductivity, and certain pesticides (SWRCB 2024).

8.3 Regulatory Setting

This section includes applicable laws, regulations, plans, and other programs relevant to surface water quality in the Project Area.

8.3.1 Federal

8.3.1.1 Clean Water Act

The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States (including wetlands) and regulating quality standards for surface waters and gave the EPA the authority to implement control programs. The CWA authorizes EPA to delegate many permitting, administrative, and enforcement aspects of the CWA to state governments, with EPA retaining oversight responsibilities. The EPA has delegated various authorities to establish water quality standards and regulating controllable factors affecting water quality to the State of California. Federal regulations and policies relevant to implementing the Proposed Projects include CWA Section 401 water quality certifications, Section 402 establishing the National Pollutant Discharge Elimination System (NPDES) permit program, Section 404 regulating the discharge of dredged or fill material into waters of the United States, and Section 303(d) addressing water quality-related impairments of surface waters.

8.3.1.1.1 Section 401 – Water Quality Certifications

Section 401 of the CWA requires any person applying for a federal permit or license to conduct any activity, including the construction or operation of facilities, which may result in any discharge into the navigable waters, to provide the licensing or permitting agency with a certification from the state in which the discharge originates or will originate that the discharge will comply with all applicable water quality standards, limitations, and restrictions. No license or permit may be issued by a federal agency until Section 401 certification has been granted by the applicable state agency, and no license or permit may be issued if certification has been denied. Examples of permits or licenses that are subject to Section 401 of the CWA include permits issued under Section 404 of the CWA and permits issued under Sections 9 and 10 of the Rivers and Harbors Act. The SWRCB administers the Section 401 Water Quality Certification (WQC) for the Project Area.

8.3.1.1.2 Section 402 – NPDES Permit Program

Section 402 of the CWA established the NPDES permit program that regulates point and non-point source discharges to waters of the United States. In California, the SWRCB and nine RWQCBs administer the NPDES permit program. The NPDES permit program requires permits for discharges from construction activities that disturb one or more acre.

8.3.1.1.3 Section 404 – Discharge of Dredged for Fill Material

Section 404 of the CWA established a program to regulate the discharge of dredged or fill material into waters of the United States. The USACE administers the program and reviews and issues permits. The basic premise of the program is that no discharge of dredged or fill material may be permitted if (1) a practicable alternative exists that is less damaging to the aquatic environment or (2) the nation's waters would be significantly degraded. In other words, when applying for a permit, the applicant must demonstrate that steps have been taken to avoid impacts on wetlands, streams, and other aquatic resources; that potential impacts have been minimized; and that compensation will be provided for all remaining unavoidable impacts.

8.3.1.1.4 Section 303(d) – Water Quality-Related Impairments of Surface Waterbodies

Section 303(d) of the CWA requires states to develop a list of waterbodies (or sections of waterbodies) that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers (i.e., municipalities and industries). The law requires that states establish priority rankings for waters on the lists and develop total maximum daily loads (TMDLs) for these waters. TMDL is the amount of loading that the waterbody can receive and still achieve water quality standards. The TMDL must include an allocation of allowable loadings to point and non-point sources, with consideration of background loadings and a margin of safety.

8.3.1.2 Federal Antidegradation Policy

The federal antidegradation policy is designed to protect existing uses and the level of water quality necessary to protect existing uses and provide protection for higher quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions (C.F.R., Title 40, Part 131.12):

1. Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
2. Where the quality of waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the state finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.
3. Where high quality waters constitute an outstanding National resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

8.3.2 State

8.3.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is California's statutory authority for the protection of water quality. Under the Porter-Cologne Act, California must adopt water quality policies, plans, and objectives that ensure that beneficial uses of the state are reasonably protected. The act requires California's nine RWQCBs to adopt water quality control plans and establish water quality objectives, and authorizes SWRCB and the RWQCBs to issue and enforce permits containing requirements for the discharge of waste to surface waters and land. The Project Area is located within the CVRWQCB jurisdiction.

8.3.2.2 Water Quality Control Plan

Under the Porter-Cologne Act, each RWQCB must formulate and adopt a water quality control plan (known as a Basin Plan) for its region. The CVRWQCB has adopted the "Water Quality Control Plan for the Sacramento and the San Joaquin River Basins (Basin Plan)" (CVRWQCB 2019). The Basin Plan consists of: (1) beneficial uses to be protected; (2) water quality objectives

for the reasonable protection of beneficial uses; (3) a program of implementation for achieving the water quality objectives; and (4) a surveillance and monitoring program.

8.3.2.3 Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California

The "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" applies to discharges of toxic pollutants into inland surface waters, enclosed bays, and estuaries (SWRCB 2005). The policy describes methods for determining the need for and setting of effluent limits in NPDES permits from the federal National Toxics Rule and California Toxics Rule (CTR) criteria and priority pollutant objectives established in state water quality control plans. The policy also establishes certain monitoring requirements and chronic toxicity control provisions and includes special provisions for certain types of discharges.

8.3.2.4 SWRCB Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California)

The goal of SWRCB Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") is to maintain high-quality waters where they exist in the state. SWRCB Resolution No. 68-16 states, in part, the following.

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high-quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that: (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The SWRCB has interpreted Resolution No. 68-16 to incorporate the federal antidegradation policy, which is applicable if a discharge that began after November 28, 1975, would lower existing surface water quality.

8.3.2.5 SWRCB Construction Stormwater General Permit

The SWRCB adopted a general NPDES permit for stormwater discharges associated with construction activity (Construction Stormwater General Permit) in Order No. 2022-0057-DWQ/NPDES Permit CAS000002, which became effective on September 1, 2023. Construction activities that disturb one or more acre of land are required to obtain coverage under the Construction Stormwater General Permit, which involves filing of a Notice of Intent and preparation and implementation of a stormwater pollution prevention plan (SWPPP) that specifies BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges. The Construction Stormwater General Permit requires implementation of

BMPs that control pollutant discharges using the best available technology economically achievable for toxic and non-conventional contaminants, the best conventional technology for conventional contaminants, and any other necessary BMPs to meet water quality standards. The Construction Stormwater General Permit includes specific requirements based on the "risk level" of the site. The Construction Stormwater General Permit contains technology-based numeric action levels for pH and turbidity and requires visual monitoring for potential contaminant runoff at all sites, and effluent monitoring at all risk level 2 and 3 sites, with follow-up actions required for exceedances of numeric action levels.

8.3.3 Local

8.3.3.1 Yuba County 2030 General Plan

The following goals and policies from the Yuba County 2030 General Plan relate to water quality effects in the Project Area (Yuba County 2011).

GOAL HS 3: Water Quality. Preserve, protect, and improve the quality of regional water supplies.

- **Policy HS 3.1.** County and regional water supply providers should monitor and proactively address water quality problems, with a focus on achieving and maintaining adequate water quality for "beneficial uses" of area waterways identified in the Yuba County Integrated Regional Water Management Plan. "Beneficial uses" in Yuba County include municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

GOAL HS 8: Geology and Soils. Reduce risk to people and property from geologic hazards and soil limitations.

- **Policy HS 8.5.** An erosion and sediment control plan meeting County standards for preventing increased discharge of sediment is required for:
    - Projects that propose to grade more than 10,000 square feet of area having a slope greater than 10 percent.
    - Clearing and grubbing areas of one acre or more regardless of slope.
    - Projects where more than 2,500 square feet will be inadequately protected from erosion during any portion of the rainy season.
    - Projects that involve grading will occur within 50 feet of any watercourse; or
    - Where the County determines that the grading will or may pose a significant erosion, or sediment discharge hazard for any reason.

  Projects having more than 1 acre of soil disturbance covered under the SWRCB's Construction Stormwater General Permit, discussed above, may still be subject to a plan check to ensure the SWPPP meets County standards.

- **Policy HS 8.6.** Project applicants may be required to show evidence of coverage, or application for coverage, under an NPDES general construction permit and a SWPPP with a State-issued Waste Discharger Identification number, if applicable. Grading activities

shall be located and designed to avoid contributing to the violation of provisions of any applicable NPDES stormwater discharge permit.

- **Policy HS 8.8.** For engineered grading, the peak off-site storm water discharge from the project site shall not exceed pre-construction conditions unless the applicant demonstrates that downstream storm water conveyance systems have sufficient capacity to handle the increased flow rate without exceeding established design standards, subject to County approval.

8.3.3.2 Yuba County Code

Yuba County Code Chapter 11.23, "Grading, Drainage, and Erosion Control" details the requirements for county grading permits and related geotechnical investigations and inspections that would be required for buildings meant for public occupancy in areas with potential risk related to geologic conditions or soil limitations, as identified on county-maintained maps.

8.4 Impact Assessment Methodology

This section describes the assessment methods used to analyze the effects on water quality in the Project Area waterbodies that could result from construction and O&M of the Proposed Projects and Alternatives 1 and 2, and the thresholds of significance that determine the significance of effects.

8.4.1 Facility Construction-Related Impacts

Water quality effects related to modification of power generation- and water conveyance-related facilities for the YRDP Relicensing Project (i.e., New Colgate Powerhouse New Tailwater Depression System, Our House Diversion Dam and Log Cabin Diversion Dam Fish Release Outlets, Lohman Ridge Diversion Tunnel Intake) were assessed considering the many aspects of the work that would be involved and potential environmental exposure to contaminants. The types of materials and contaminants that may be handled, stored, used, or produced and released to the environment, and the related fate and transport and potential for discharge to adjacent waterbodies were considered. Also considered was the location of the construction activities within the watershed relative to other project activities, duration of work, whether work would be conducted within waterbody channels, and plans for implementing erosion control and pollution prevention BMPs during and following completion of construction activities.

A construction impact determination for water quality impacts related to modification of power generation- and water conveyance-related facilities for the YRDP Relicensing Project is made relative to the Existing Condition in the following impact discussion.

- YRDP Impact WQ-PP-1: Impacts on Surface Water Quality from Modification of Power Generation- and Water Conveyance-Related Facilities for the YRDP Relicensing Project.

Impact determinations associated with construction activities that would occur from the proposed YRDP implementation plans, including the *Recreation Facilities Plan*, which would involve construction activities over a 20-year timeframe, are addressed in the following section.

As discussed in Chapter 4, because facility construction-related activities are identical for both the

YRDP Relicensing Project and Alternatives 1 and 2, the above-listed impact analysis is presented once, and not repeated in the subsequent discussion of potential impacts related to Alternatives 1 and 2. Furthermore, because no new facilities are proposed for the Narrows Relicensing Project, there would be no related construction impacts on surface water quality related to this project.

8.4.2 Implementation Plan Impacts

Water quality effects from the YRDP implementation plans were assessed considering the location, frequency, and types of activities that would be conducted. The types of materials and contaminants that may be handled, stored, used, or produced and released to the environment, and the related fate and transport and potential for discharge to adjacent waterbodies was considered. Also considered was the location of the implementation plan activities within the watershed relative to other project activities, duration of work, whether work would be conducted within waterbody channels, and plans for implementing erosion control and pollution prevention BMPs during and following completion of implementation plan activities.

Implementation plan impact determinations are made relative to the Existing Condition in the following impact discussions.

- YRDP Impact WQ-PP-2: Impacts on Surface Water Quality from Implementation of the YRDP Recreation Facilities Plan.
- YRDP Impact WQ-PP-3: Impacts on Surface Water Quality from Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan.
- YRDP Impact WQ-PP-4: Impacts on Surface Water Quality from Other YRDP Implementation Plans.

As discussed in Chapter 4, because implementation plan activities are identical for both the YRDP Relicensing Project and Alternatives 1 and 2, the above-listed impact analyses are presented once, and not repeated in the subsequent discussion of potential impacts related to Alternatives 1 and 2.

8.4.3 Water Operations-Related Impacts

Operations-related changes that could affect surface water quality in the Project Area waterbodies upstream of Englebright Dam, the lower Yuba River, and areas downstream of the lower Yuba River would be primarily due to changes in reservoir storage and elevation, and river and creek flow rates that would occur under the Proposed Projects and Alternatives 1 and 2. As described in Chapters 2, 3 and 5, no substantial changes in Narrows Project operations would occur under the Proposed Projects or Alternatives 1 and 2. Operations-related impacts to surface water quality under the Narrows Project would be only due to a limited number of amended and/or new proposed FERC license conditions. Consequently, operations-related surface water quality impacts evaluated for the YRDP Relicensing Project and Narrows Relicensing Project considered the following.

YRDP

- Areas Upstream of Englebright Dam
    - Quantitative changes in simulated flows and water temperatures

    - Qualitative changes to surface water quality associated with operations or additional operations-related activities
        - Reservoir operations
        - Spills at project dams
        - Powerhouse operations
        - Diversion dam operations
        - License implementation plans
- Lower Yuba River
    - Quantitative changes in simulated flows and water temperatures
    - Qualitative changes to surface water quality associated with operations or additional operations-related activities
        - Powerhouse operations
        - License implementation plans
- Areas Downstream of the Lower Yuba River
    - Quantitatively informed qualitative changes in flow and surface water quality conditions in areas downstream of the lower Yuba River

Under the Alternative 1 analyses for the YRDP, indirect operations-related impacts are qualitatively evaluated in reaches and reservoirs upstream of the YRDP in the Middle Yuba River and South Yuba River watersheds.

Narrows Project

- Qualitative changes to surface water quality associated with operations or additional operations-related activities
    - Amended and/or newly proposed FERC license conditions

Assessment of the potential effects of operations-related changes to river and creek flow rates on surface water quality considered the degree to which flow changes can result in changes in constituent concentrations (e.g., trace metals concentrations, mercury loading) and physical parameters (e.g., pH, turbidity). In addition, reservoir storage and elevation changes were evaluated to determine whether reservoir stratification would be affected, potentially resulting in effects on physical processes that would affect dissolved oxygen, nutrient cycling, or release of trace metals and mercury into the water column.

Water temperature is addressed within this section with respect to effects on dissolved oxygen. Detailed analysis regarding water temperature and effects on beneficial uses is provided in Chapter 9, "Fisheries Resources," as aquatic life beneficial uses of Project Area waterbodies would be most sensitive to changes in temperature due to Proposed Projects and Alternatives 1 and 2.

Reservoir storage and river flow rate model results from Yuba Water's YRDPM supported the assessment. The YRDPM includes representation of a long-term period of record of hydrology (water years 1970–2021), member unit water supply demands, current and proposed facilities, and

current and proposed operational requirements. Changes in simulated flows as a result of the Proposed Projects and Alternatives 1 and 2 relative to the bases of comparison were used to determine potential surface water quality impacts. More information about the YRDPM, including assumptions, inputs, and model limitations, is provided in Appendix 5A, "Yuba Water Operations Model Technical Memorandum."

A "dual baseline" approach was applied to the assessment of impacts from operations-related changes in reservoir storage and river and creek flow rates. This involved the use of a Future Baseline in addition to the use of the typical Existing Condition basis of comparison under CEQA. Table 8.4-1 shows the appropriate comparison for the Proposed Projects and Alternatives 1 and 2 for determination of water operations-related impacts. Evaluations involving the Future Baseline were conducted to make a meaningful comparison among the Proposed Projects and Alternatives 1 and 2. Refer to Chapter 4 for a comprehensive explanation as to why a Future Baseline has been considered and why it is appropriate to use a Future Baseline as part of the analyses conducted for the Proposed Projects.

Table 8.4-1. Summary of Scenario Comparisons for Project and Alternative Impact Determinations.

Scenario Name	Basis of Comparison	Impacts	Use in Analysis
Proposed Projects (existing YB/DS / no FERC 4(e) Conditions)	Existing Condition	YRDP Impacts WQ-PP-5 through WQ-PP-12	For CEQA impact determinations
Proposed Projects (with YB/DS with FERC 4(e) Conditions)	Future Baseline	YRDP Impacts WQ-FPP-5 through WQ-FPP-12	For CEQA impact determinations
Alternative 1 (includes YB/DS with FERC 4(e) Conditions)	Existing Condition	YRDP Impacts WQ-Alt1-5 through WQ-Alt1-12	For information purposes only
Alternative 1 (includes YB/DS with FERC 4(e) Conditions)	Future Baseline	YRDP Impacts WQ-FAlt1-5 through WQ-FAlt1-12	For CEQA impact determinations
Alternative 2 (includes YB/DS with FERC 4(e) Conditions)	Existing Condition	YRDP Impacts WQ-Alt2-5 through WQ-Alt2-12	For information purposes only
Alternative 2 (includes YB/DS with FERC 4(e) Conditions)	Future Baseline	YRDP Impacts WQ-FAlt2-5 through WQ-FAlt2-12	For CEQA impact determinations

FERC = Federal Energy Regulatory Commission
YB/DS = Yuba-Bear/Drum-Spaulding

As explained in Chapter 4, all significance conclusions for reservoir storage and river and creek flow-dependent impact analyses related to the Proposed Projects are based on a comparison to the Existing Condition and Future Baseline. Significance conclusions for impacts of the Proposed Projects that could affect water quality in ways other than changes in reservoir storage and river and creek flows (e.g., effects from construction and implementation plans) are based on comparison to the Existing Condition.

This chapter evaluates the potential water-related operational impacts of Alternatives 1 and 2 relative to the Existing Condition for informational purposes only. As explained in Chapter 4, because these comparisons would result in misleading impact determinations, this chapter does not use the Existing Condition to draw significance conclusions for impacts resulting from changes in reservoir storage and river and creek flows under Alternatives 1 and 2. Rather significance conclusions are based on comparisons between these alternatives and the Future Baseline. Significance conclusions for potential impacts not related to reservoir storage and river and creek

flow changes (e.g., effects from construction and implementation plans) are based on comparison to the Existing Condition.

8.4.4 Routine Operations- and Maintenance-Related Impacts

Routine operations- and maintenance-related water quality effects were assessed considering the location, frequency, and types of activities that would be conducted with the Proposed Projects and Alternatives 1 and 2 relative to the frequency and types of routine O&M activities that currently occur under the Existing Condition. The types of materials and contaminants that may be handled, stored, used, or produced and released to the environment, and the related fate and transport and potential for discharge to adjacent waterbodies was considered. Also considered was the location of the routine O&M activities within the watershed relative to other project activities, whether work would be conducted within waterbody channels, and plans for implementing erosion control and pollution prevention BMPs during and following completion of O&M activities.

Routine O&M impact determinations are made relative to the Existing Condition in the following impact discussions.

- YRDP Impact WQ-PP-13: Impacts on Surface Water Quality from Other Operations and Maintenance of the YRDP Relicensing Project.
- YRDP Impact WQ-Alt1-13: Impacts on Surface Water Quality from Other Operations and Maintenance of Alternative 1.
- YRDP Impact WQ-Alt2-13: Impacts on Surface Water Quality from Other Operations and Maintenance of Alternative 2.

Because no new facilities are proposed for the Narrows Project, and O&M activities at the facilities would be within the range of activities that occur under the Existing Condition, there would be no O&M impacts on surface water quality related to this project.

8.4.5 Impact Indicators and Significance Criteria

Significance criteria applied to make surface water quality impact determinations are based on questions presented in CEQA Guidelines Appendix G, "Environmental Checklist," Section X, "Hydrology and Water Quality." An impact on surface water quality would be significant if implementation of the Proposed Projects or Alternatives 1 or 2 would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality; or
2. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would:
    a. Result in substantial erosion or siltation on- or off-site; or
    b. Create or contribute runoff water that would provide substantial additional sources of polluted runoff; or
3. Risk release of pollutants due to project inundation in flood hazard zones.

4. Conflict with or obstruct implementation of a water quality control plan.

These significance criteria also were applied to the No Project Alternative. How the Proposed Projects, Alternatives 1 and 2, and the No Project Alternative were evaluated relative to the above significance criteria is explained below.

Significance Criterion #1

Significance Criterion #1 addresses three components of a potential surface water quality impact: (1) violate any water quality standard; (2) violate waste discharge requirements; or (3) otherwise substantially degrade surface water quality.

A "water quality standard" consists of the designated beneficial uses of a waterbody and the water quality criteria (referred to as "objectives" in California) that when met result in protection of the beneficial uses. Therefore, impact determinations made relative to violation of any water quality standard considered the designated beneficial uses of the waterbody and the applicable water quality criteria/objectives. Water quality criteria/objectives have exposure durations associated with them based on the associated beneficial use protection. For example, criteria/objectives for the protection of aquatic life typically apply either on a short-term, acute (i.e., 1-hour exposure) basis or a longer-term, chronic (i.e., 4-day average) basis. Furthermore, aquatic life criteria are typically not absolute values never to be exceeded, rather they are not to be exceeded more than once in a three-year period, which recognizes that an infrequent marginal exceedance of a water quality criteria/objective provides a high degree of protection (EPA 1994; p. 3-3). Criteria/objectives for human health protection are typically for protection over a lifetime (i.e., 70 years) of exposure. Therefore, significant or potentially significant impact determinations are made relative to Significance Criterion #1 when water quality with the Proposed Projects or alternative would cause water quality changes that would result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that could result in adverse effects on beneficial uses. A less-than-significant impact determination is made when the potential exceedance of water quality criteria/objectives would be of low magnitude and of limited geographic extent such that there would be no adverse effects on beneficial uses of the waterbody.

Waste discharge requirements issued by the CVRWQCB and SWRCB implement applicable water quality criteria/objectives based on designated beneficial uses of the waters receiving the discharge. Therefore, the above-described considerations for making impact determinations relative to violation of water quality standards were applied for making determinations relative to violation of waste discharge requirements as well.

Water quality degradation occurs when there is a lowering of water quality (i.e., an increase in pollutant levels or depletion of an important constituent such as dissolved oxygen) due to an action or discharge. Water quality degradation can have an adverse environmental effect if resulting water quality conditions increase the likelihood of water quality criteria/objectives exceedances and adverse effects on beneficial uses. As discussed above, frequency, magnitude, and geographic extent of water quality degradation is relevant to determining whether water quality degradation would cause this to occur. And the significance criterion, consistent with the Appendix G checklist question, refers to "substantial" water quality degradation. Therefore, significant or potentially significant impact determinations are made relative to Significance Criterion #1 when the Proposed Projects or alternative would cause water quality degradation on a long-term basis that

eliminates a substantial amount of a waterbody's available assimilative capacity which, in turn, increases the likelihood of water quality criteria/objectives exceedances and adverse effects on beneficial uses. Less-than-significant impact determinations are made if the water quality degradation would be of short duration, low frequency, unlikely to rise to the level of causing a water quality objective/criterion to be exceeded, and/or of limited geographic extent, thus posing negligible risk for adverse effects on beneficial uses of the waterbody.

For waterbodies on the SWRCB's CWA Section 303(d) list due to specific constituent impairments (e.g., mercury), long-term "measurable" degradation was the basis for making impact determinations in recognition that this determination should be more sensitive when water quality conditions in a waterbody are already impaired.

Significance Criterion #2

Significance Criterion #2 addresses potential impacts on surface water quality through alterations of a water course or on-land activities that could result in the discharge of pollutants. The significance criterion refers to "substantial" erosion or siltation and additional sources of polluted runoff as the basis for making a significant or potentially significant impact determination, consistent with the Appendix G checklist question. Therefore, as with Significance Criterion #1, significant or potentially significant impact determinations are made relative to Significance Criterion #2 when the potential for erosion or siltation or polluted runoff with the Proposed Projects or alternative would cause either exceedance of a water quality standard, as defined above, or water quality degradation on a long-term basis that eliminates a substantial amount of a waterbody's available assimilative capacity that increases the likelihood of water quality criteria/objectives exceedances and adverse effects on beneficial uses. Less-than-significant impact determinations are made if the potential for erosion or siltation or polluted runoff would be of short duration, low frequency, of limited geographic extent, and/or the resulting discharges would cause low magnitude siltation and low magnitude effects on pollutant levels that pose negligible risks for adverse effects on beneficial uses of the waterbody.

Significance Criterion #3

Significance Criterion #3 addresses whether components of the Proposed Projects or alternatives would conflict with a water quality control plan. The relevant water quality control plan for the Project Area is the "Water Quality Control Plan for the Sacramento and the San Joaquin River Basins" (Basin Plan) (CVRWQCB 2019). The Basin Plan defines beneficial uses, water quality objectives to protect beneficial uses, a program of implementation for achieving water quality objectives, and a surveillance and monitoring program.

8.5 Environmental Impact Analysis

This section presents the impacts of the Proposed Projects and alternatives on water quality of Project Area waterbodies.

8.5.1 Proposed Projects compared to the Existing Condition

Construction, operations, and maintenance activities for the Proposed Projects under the new FERC licenses have the potential to affect surface water quality of waterbodies in the Project Area. The discussions below address these potential impacts.

YRDP Impact WQ-PP-1: Impacts on Surface Water Quality from Modification of Power Generation- and Water Conveyance-Related Facilities for the YRDP.
A component of the YRDP Relicensing Project is modifications at the New Colgate Powerhouse, Our House and Log Cabin Diversion Dams, and Lohman Ridge Diversion Tunnel. Modification of these facilities would involve a variety of construction-related activities, such as vegetation removal, excavation, surface grading, trenching, road construction, soil stockpiling, and other general facility construction activities (i.e., concrete, steel, carpentry, and other building trades). These activities could result in stormwater-related soil erosion and runoff. Construction activities also would involve the transport, handling, and use of a variety of hazardous substances and nonhazardous materials. Typical construction-related contaminants include petroleum products for O&M of machinery (e.g., fuel, oils, solvents), concrete, paints and other coatings, cleaning agents, debris, and trash. Construction activities also would involve material storage and laydown areas. Table 8.5-1 presents the potential hazards to surface water quality that could occur from construction activities for each project component and the nearest waterbody. As shown in Table 8.5-1, construction activities at each YRDP facility would occur at separate locations adjacent to different Project Area waterbodies and would be of short duration (i.e., 6 months or less).

Note that the ARC Spillway component of the YRDP has undergone separate project-specific CEQA compliance (see Chapter 2, "Project Description") and Yuba Water issued a final EIR that fully analyzed construction-related impacts of the ARC Spillway Project (Yuba Water 2024). Yuba Water's analysis of potential construction impacts on surface water quality from the ARC Spillway were determined to be less than significant after mitigation (Yuba Water 2024). Therefore, construction impacts of the ARC Spillway component of the YRDP are not included in the discussion of YRDP construction-related impacts, but are addressed in the cumulative impacts assessment in Section 8.6.

Table 8.5-1. Potential Water Quality Effects from YRDP Facility Construction.

YRDP Facility	Nearest Waterbody	Work Areas and Duration	Potential Hazards to Water Quality
New Colgate Powerhouse New Tailwater Depression System	• New Bullards Bar Reservoir • Lower Yuba River	• Confined to powerhouse, yard, and immediate vicinity. • No in-water work. • No undisturbed areas are anticipated to be disturbed as a result of the work. • Duration: 5 months	• Spill of concrete, toxic chemicals and other hazardous materials on land could enter adjacent waterbodies.
Our House Diversion Dam and Log Cabin Diversion Dam Fish Release Outlets	• Middle Yuba River • Oregon Creek	• Confined to the dam outlet area and immediate vicinity. • In-water work from floating barge. • No undisturbed areas are anticipated to be disturbed as a result of the work. • Duration: 6 months	• Spill of concrete, toxic chemicals and other hazardous materials on land could enter adjacent waterbodies or directly spill into waterbodies.

YRDP Facility	Nearest Waterbody	Work Areas and Duration	Potential Hazards to Water Quality
Lohman Ridge Diversion Tunnel Intake	• Middle Yuba River	• All work would be confined to the tunnel intake and immediate vicinity. • No in-water work. • No undisturbed areas are anticipated to be disturbed as a result of the work. • Duration: 6 months	• Spill of concrete, toxic chemicals and other hazardous materials on land could enter adjacent waterbodies.

YRDP = Yuba River Development Project

Aquatic life beneficial uses are the beneficial uses of Project Area waterbodies most sensitive to the construction-related contaminants that could be discharged. For a comprehensive discussion of YRDP construction-related effects on aquatic life beneficial uses (e.g., warm and cold freshwater habitat, fish migration), refer to Chapter 9, "Fisheries Resources." Other beneficial uses, such as municipal and domestic supply, contact and non-contact recreation, and irrigation, would be less sensitive to water quality disturbances from construction activities compared to aquatic life beneficial uses. These beneficial uses typically require greater exposure duration and/or concentrations of typical construction-related contaminants compared to aquatic life beneficial uses before an adverse effect would occur.

Yuba Water would implement construction-related measures for water quality protection, as identified in Chapter 2, Section 2.7.1.5, "Summary of FERC-Approved YRDP Implementation Plans." Relevant implementation plans and short descriptions of how they would reduce impacts on water quality from construction activities are summarized in Table 8.5-2.

Table 8.5-2. YRDP Implementation Plans That Address Construction-Related Water Quality Effects.

YRDP Implementation Plan	Elements Relevant to Water Quality Protection	Resulting Effect on Water Quality
Hazardous Materials Management Plan (WR1)	• Construction contractors required to have a work-specific spill prevention and control plan in place. • Required training on spill response and stocking of cleanup materials onsite. • Hazardous materials stored away from storm drains and watercourses.	• Reduces likelihood of a spill of toxic chemicals and other hazardous materials occurring on-site and reduces likelihood of contaminants from a spill being discharged to adjacent waterbodies.
Erosion and Sediment Control Plan (GS1)	• BMPs for control of erosion and sedimentation during construction. • Development of a SWPPP. • Postconstruction erosion control measures.	• Reduces potential for discharge of suspended sediment to adjacent waterbodies, thus also reducing the potential for discharge of on-site contaminants and reducing potential for increased turbidity and TSS levels in adjacent waterbodies.
Integrated Vegetation Management Plan (TR1)	• Restoration of native vegetation in disturbed areas.	• Reduces potential for discharge of suspended sediment to adjacent waterbodies, thus also reducing the potential for discharge of on-site contaminants and reducing potential for increased turbidity and TSS levels in adjacent waterbodies.

BMP = best management practice; SWPPP = stormwater pollution prevention plan; TSS = total suspended solids.

In addition, as described in Chapter 17, "Hazards and Hazardous Materials," Yuba Water already has in place spill prevention, control, and countermeasure (SPCC) plans for New Colgate

Powerhouse, New Colgate Penstock Shutoff Valve, and New Bullards Bar Dam, which would be implemented during project construction activities at these facilities. The SPCC Plans have been developed in accordance with the regulatory requirements of Title 40 of the C.F.R., Part 112, which must include specific measures and practices to prevent oil and oil containing products (i.e., gasoline, diesel fuel, motor oil, hydraulic fluid, aviation fuel, oil-based paint, oil-based paint thinner, roofing tar, and petroleum-based solvents) from being discharged to navigable waters of the United States and adjoining shorelines.

Furthermore, SWPPPs would be developed in accordance with the SWRCB's Construction Stormwater General Permit (Order No. 2022-0057-DWQ/NPDES Permit CAS000002). The development of the SWPPPs and applicability of other provisions of the Construction Stormwater General Permit depends on the "risk" classification for the construction, which is determined based on the potential for erosion to occur as well as the susceptibility of the receiving water to potential adverse effects of construction. While the determination of project risk level and planning and development of the SWPPPs and associated BMPs to be implemented would be completed as a part of final design and contracting for the work, the responsibility for compliance with the provisions of the Construction Stormwater General Permit necessitates that BMPs are applied to all disturbance activities. In addition to BMPs, the SWPPPs would include BMP inspection and monitoring activities, and identify responsibilities of all parties, contingency measures, agency contacts, and training requirements and documentation for those personnel responsible for installation, inspection, maintenance, and repair of BMPs.

The Construction Stormwater General Permit contains numeric action levels for pH and turbidity, specifies storm event water quality monitoring to determine if construction is resulting in elevated discharges of these constituents, and prescribes monitoring for any non-visible contaminants determined to have been potentially released. If a numeric action level is determined to have been exceeded, the Construction Stormwater General Permit requires the discharger to conduct a construction site and runoff evaluation to determine whether contaminant sources associated with the site's construction activity may have caused or contributed to the exceedance and immediately implement corrective actions if they are needed. The Construction Stormwater General Permit also specifies runoff reduction requirements for all sites not covered by a municipal NPDES permit, to minimize postconstruction stormwater runoff impacts.

Finally, YRDP construction would be subject to requirements in the SWRCB-issued CWA Section 401 WQC issued for the project. Yuba Water proposes 38 conditions be included in the WQC for the YRDP Relicensing Project, including the following conditions pertaining to protecting water quality when construction or ground-disturbance activities are occurring.

- Yuba Water Proposed WQC Condition 16, Hazardous Materials, requires implementation of the Hazardous Materials Management Plan listed in Table 8.5-2.
- Yuba Water Proposed WQC Condition 18, Construction and Maintenance, requires compliance with the SWRCB's Construction Stormwater General Permit, implementation of the Erosion and Sediment Control Plan listed in Table 8.5-2, and preparation and implementation of Water Quality Monitoring and Protection Plans (WQMP Plans).

The WQMP Plans in Yuba Water Proposed WQC Condition 18 must demonstrate compliance with sediment and turbidity water quality objectives in the Basin Plan and be consistent with the

U.S. Forest Service's "National Best Management Practices for Water Quality Management on National Forest Service Lands." WQMP Plans would identify control measures for activities with the potential to cause erosion, stream sedimentation, fugitive dust, soil mass movement, release of hazardous materials, or other water quality impairment. Control measures may include diverting runoff from disturbed areas, measures to dissipate energy and prevent erosion, revegetation, and monitoring and maintenance. Additional details are provided in Appendix 2E.

In summary, construction activities for modification of power generation- and water conveyance-related facilities listed in Table 8.5-1 would be short in duration (i.e., 6 months or less) and at geographically separate locations. With implementation of the measures and BMPs included in the YRDP implementation plans, compliance with the SWRCB Construction Stormwater General Permit, and compliance with the conditions in the SWRCB-issued CWA Section 401 WQC for the project, pollutant discharges to surface waters would be minimized and controlled such that construction of YRDP water conveyance and power generation facilities would not cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies. Furthermore, because of the short duration and separate locations, impacts to surface water quality from construction activities at the YRDP facilities listed in Table 8.5-1 would not combine with impacts from construction activities associated with the YRDP implementation plans (addressed in YRDP Impacts WQ-PP-2, WQ-PP-3, and WQ-PP-4) or other O&M activities (addressed in YRDP Impact WQ-PP-13) to cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies.

CEQA Conclusion

Based on the above analysis, construction of power generation- and water conveyance-related facilities for the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Project Area waterbodies. Furthermore, construction of these facilities would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies. Therefore, impacts on surface water quality from construction of YRDP Relicensing Project power generation- and water conveyance-related facilities would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-2: Impacts on Surface Water Quality from Implementation of the YRDP Recreation Facilities Plan.

A component of the YRDP Relicensing Project is the *Recreation Facilities Plan* described in Chapter 2, Section 2.7.1.1.3, "YRDP Recreation Facilities." The *Recreation Facilities Plan* proposes rehabilitation of existing recreational facilities and construction of new facilities, which could affect water quality of Project Area waterbodies in the vicinity of the facilities. The scale of construction activities at each recreational facility would vary, with activities ranging from

carpentry and painting to grading for new campground and day use facilities to excavation to replace underground water distribution systems to in-water work to make boat ramp improvements. The risk to water quality would vary with each type of facility improvement and the distance of the activity to the nearest creek, river, or reservoir.

Construction activities would occur over a 20-year period, beginning the first full calendar year of the new FERC license (refer to Table 3.5-1 in Appendix 2B-14 for a schedule of major rehabilitation and improvements over the license term). Some construction activities would occur within the vicinity of Project Area waterbodies, such as the campgrounds, trails, day use areas, and boat ramps adjacent to New Bullards Bar Reservoir. Other construction activities would occur in upland areas. Construction activities at each site are largely planned to occur within a single year. For example, construction of improvements at the Cottage Creek Campground are planned to occur in License Year 2. Because construction activities would be distributed over a 20-year period, be spatially dispersed, and construction of most improvements would be completed within a single license year, the associated potential impacts to surface water quality of Project Area waterbodies from construction of individual facility improvements would not overlap or be additive.

As discussed in YRDP Impact WQ-PP-1, the YRDP Relicensing Project includes implementation plans for hazardous materials management, erosion and sediment control, and vegetation management that would reduce the potential discharge of pollutants from construction activities to surface waterbodies in the Project Area. Furthermore, the SWPPPs that would be required by the SWRCB's Construction Stormwater General Permit, where there would be a disturbance of one acre or more, would require application of construction BMPs to minimize and control discharges of pollutants to surface waters. Finally, construction activities would be subject to requirements in the CWA Section 401 WQC issued for the YRDP Relicensing Project. Consequently, for the same reasons described in YRDP Impact WQ-PP-1, construction activities for the *Recreation Facilities Plan* would not cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies.

Operation of the rehabilitated and new YRDP recreational facilities would not cause water quality in Project Area surface waterbodies to differ appreciably from that which occurs under the Existing Condition. Most of the *Recreation Facilities Plan* consists of rehabilitation of existing facilities where recreation activities occur under the Existing Condition. As discussed in Chapter 11, "Recreation," Section 11.5, "Environmental Analysis," the proposed recreational facility improvements would focus recreational use along river stretches through trail and access improvements to minimize overuse at existing facilities by providing additional locations for recreational use. Furthermore, the *Recreation Facilities Plan* requires that Yuba Water conduct routine maintenance activities, includes a monitoring program that would identify increases in use and facility occupancy, and includes a monitoring program with guidance on mitigating increased use either through management actions or the development of additional capacity to meet increased use and recreational demand to minimize the potential adverse effect on the physical environment from increased use. Hence, the routine maintenance and monitoring activities would ensure that recreational use-related factors that could lead to adverse effects on water quality (e.g., erosion and associated high-turbidity runoff, pollutant runoff, trash) in nearby waterbodies are not allowed

to substantially increase following plan implementation. Consequently, recreation-related effects on surface water quality that would occur from operation of the rehabilitated recreational facilities would not be substantially greater than that which occurs for the Existing Condition. Likewise, water quality effects on adjacent waterbodies that would occur from operation of new recreational facilities, while implementing routine maintenance and monitoring activities, would not be substantial compared to the Existing Condition.

Therefore, implementation of the *Recreation Facilities Plan* would not result in an increase in recreational activity that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies.

CEQA Conclusion

Based on the above analysis, implementation of the YRDP *Recreation Facilities Plan* would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Project Area waterbodies. Furthermore, the YRDP *Recreation Facilities Plan* would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies. Therefore, impacts from implementation of the YRDP *Recreation Facilities Plan* on surface water quality would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-3: Impacts on Surface Water Quality from Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan.
The primary activities of the YRDP's *Log Cabin and Our House Diversion Dams Sediment Management Plan* are: (1) passage of sediment through the dams; (2) mechanical removal of sediment behind the dams, and (3) stockpiling of mechanically removed sediment. Effects of these activities on surface water quality of Project Area waterbodies are addressed separately below.

Passage of Sediment

Sediment releases between October 1 and March 21 for at least nine consecutive days. Sediment releases could occur more than once during this period. Downstream sediment passage would result in short term increased downstream turbidity and total suspended solids (TSS) levels during a time of already high levels. Following its release, the sediment would settle and natural geomorphic processes would take over. Sediment passage would be subject to water quality-related conditions in permits, including the SWRCB's CWA Section 401 WQC, which would require compliance with water quality objectives for turbidity.

There have been three sediment passage events at Our House Diversion Dam—two in 2017 and one in 2019 (Yuba Water 2018). Thus, this activity occurs under the Existing Condition at that facility. No sediment passage events have been conducted at Log Cabin Diversion Dam (Yuba Water 2018); sediment removal has occurred, as discussed further below. Data from the 2017 sediment passage event at Our House Diversion Dam show that turbidity levels below the

diversion dam were close to that of the inflow, largely due to the overall high flows in the Middle Yuba River during the event. Turbidity levels ranged between 5 NTU and 267 NTU upstream of Our House Diversion Dam and between 5 NTU and 279 NTU downstream of Our House Diversion Dam (Yuba Water 2020). Similar turbidity conditions would likely occur during future sediment passage events at both diversion dams given that the events would occur when flows are relatively high (i.e., at least 540 cfs into the Log Cabin Diversion Dam impoundment and at least 1,500 cfs into the Our House Diversion Dam impoundment).

In summary, the passage of sediment would be timed to occur when flow rates, turbidity, and TSS are naturally high and adherence to permit conditions to protect water quality would be required. As such, passage of sediment would not cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Oregon Creek or the Middle Yuba River.

The sediment passage events would result in temporary suspension of sediments that would settle out of the water column downstream and be redistributed by high winter flows. Passage of sediment would likely not exacerbate the CWA Section 303(d) impairments for copper and iron in Oregon Creek or mercury and chromium impairments in the upper Yuba River, downstream of the Middle River confluence, as explained further below.

Copper. Copper is a naturally occurring element. The CWA Section 303(d)-listing of Oregon Creek for copper impairment is based on data reported to the SWRCB by the South Yuba River Citizens League (SYRCL) exceeding the CTR criterion for the chronic protection of freshwater aquatic life of 9 µg/L, expressed as the dissolved fraction (SWRCB 2024). The SWRCB determined that 5 out of 14 creek samples collected between July 2002 and October 2004 exceeded the criterion. The SYRCL dataset includes copper values that range from 1.1–34 µg/L, with the five highest concentrations being 9.6 µg/L, 15 µg/L, 16 µg/L, 19 µg/L and 34 µg/L. Natural receiving waters typically do not contain copper concentrations in the range of this dataset, especially in the range of the highest report concentrations. Yuba Water, as part of its FERC monitoring requirements, collected and analyzed water samples from Oregon Creek above and below Log Cabin Dam in fall of 2009 and spring and summer of 2012. Total recoverable copper concentrations reported by Yuba Water in Oregon Creek for these six monitoring events were all <0.35 µg/L (Yuba Water 2010a, 2013). For the same six monitoring events, total recoverable copper concentrations reported for other sites located in the North Yuba River and Middle Yuba River were all <0.53 µg/L. Hence, based on conflicting datasets, it is unclear whether Oregon Creek actually experiences copper concentrations above applicable CTR criteria.

Another important consideration in determining the degree of copper impairment in Oregon Creek is how the CTR criteria for copper are determined. The CTR copper criteria are equations that are a function of water hardness to reflect empirical data showing that toxicity of copper decreases as hardness increases. Other constituents, such as dissolved organic carbon, sulfate, sodium, alkalinity, and pH, are also known to affect copper bioavailability, thus toxicity. To account for the effects of these other constituents on copper bioavailability and promulgate copper criteria appropriate for the conditions under which they are applied, the CTR copper criteria equation includes a multiplier called a "water-effect ratio" (WER). Many waters having pH above 6.5 and dissolved organic carbon concentration above 1 mg/L have a WER greater than 1. A site-specific

WER equal to 2 would change the default criterion of 9 µg/L applied by the SWRCB to 18 µg/L. Absent site-specific information, the CTR set the default value for the WER equal to 1, which is what was applied for the SWRCB CWA Section 303(d) listing. Only when the site-specific WER is determined and applied to the CTR copper equation do we know the criterion for the site that provides the level of protection to aquatic life intended by EPA. EPA has since published updated water quality criteria for copper for the protection of freshwater aquatic life to be a "biotic ligand model" to directly account for the effect of various site-specific water quality conditions on copper bioavailability (EPA 2007). This further contributes to the uncertainty regarding Oregon Creek being impaired for copper.

The most toxic form of copper to aquatic life is the free copper ion (Cu^{2+}). However, the free copper ion has a strong tendency to bind to various dissolved organic ligands and solid phases in the water column, thereby making it biologically unavailable for uptake into aquatic life where it can cause toxicity. This process in freshwaters results in copper rather quickly precipitating into the sediments. Copper in sediment binds to various inorganic and organic constituents, such as hydrous manganese oxides and iron oxides, clay, organic matter, and sulfides.

Remobilization of copper into the water column can occur under suitable pH and oxidation-reduction conditions. However, when sediments are released from a reservoir into a stream, copper tends to remain adsorbed to the sediment particles. Skeaff et al. (2002) found that copper partitioned from water to sediment 200–300 times faster than the reverse, meaning that the remobilization of rate of copper from the sediment to the water column is typically small. Hence, copper free ions remobilized into the water column following a sediment flushing event would re-adsorb to particulates and organic carbon in the water column quickly, thereby becoming unavailable for uptake and toxicity in aquatic life. As adsorption and complexation continues, copper would precipitate out of the water column and back into the sediments of the river within days of the flushing event (Skeaff et al. 2002).

When sediment is flushed through Log Cabin Diversion Dam, the temporarily increased sediment load would likely increase total and dissolved organic carbon levels temporarily and certainly would increase total suspended solid levels in Oregon Creek. At pH levels between 6.5 and 9 and dissolved organic carbon concentrations between 1 and 6 mg/L, the typical range for these parameters in the creek, a very high percentage of copper (including up to 100% at pH of 8 or higher and a dissolved organic carbon of 6 mg/L or higher) would be bound to organic matter, thus not bioavailable to cause toxicity to aquatic life (Smith et al. 2015). Likewise, copper would also tend to bind to sediment particles, as discussed above. The higher the percentage of measured total recoverable copper in the water column that is either complexed with dissolved organic ligands or adsorbed to sediment particles, the lower the bioavailable fraction and thus the lower the potential for toxicity to aquatic life.

Based on the above findings, periodic releases of sediment from Log Cabin Diversion Dam into Oregon Creek would not result in a substantial, if any, increase in bioavailable copper in the creek or downstream waterbodies and thus would not cause toxicity to aquatic life or make the existing CWA Section 303(d) impairment for copper in Oregon Creek measurably worse.

Iron. Iron is one of the most abundant elements in the earth's crust, and it is an essential micronutrient for microflora, plants and animals. Iron is a common element in many rocks and is

an important component of many soils, especially clay soils where it is usually a major constituent. The ferrous, or bivalent (Fe^{2+}), and the ferric, or trivalent (Fe^{3+}), ions are the primary forms of concern in the aquatic environment (Great Lakes Environmental Center 2004). Solubility of ferrous and ferric forms is complex in freshwaters and is dependent on variables such as oxidation-reduction potential, pH, temperature, and dissolved organic carbon. The ferrous form can persist in waters devoid of dissolved oxygen and has higher water solubility (Great Lakes Environmental Center 2004). In oxygenated waters with a pH of 6–8, ferric iron is the dominant form, which has low solubility and forms insoluble oxides/hydroxides that precipitate out of the water column (Cardwell et al. 2023). For practical purposes, the ferric form is insoluble. While generally not considered toxic to aquatic life in moderate amounts, precipitation of large amounts of iron oxide floc can have negative impacts on aquatic organisms primarily through physical means such as clogging gills and smothering benthic invertebrates or fish eggs in the sediments (Cardwell et al. 2023). Also, particulate iron can settle and have adverse effects on bottom-dwelling invertebrates, plants, or incubating fish eggs (Cardwell et al. 2023). For iron, the primary concerns about toxicity to aquatic life result from release of iron under acidic conditions like acid mine drainage or acid rain (Cardwell et al. 2023).

The CWA Section 303(d)-listing of Oregon Creek as impaired for iron is based on data collected in 2001–2006 by SYRCL and submitted to the SWRCB. Two of 12 samples were greater than the EPA's chronic criterion for the protection of freshwater aquatic life of 1,000 µg/L (expressed as total recoverable), one at 1,090 µg/L and the other at 2,280 µg/L (SWRCB 2024). The remaining 10 sample concentrations ranged from 55–584 µg/L. Yuba Water also measured iron concentrations in Oregon Creek upstream and downstream of Log Cabin Diversion Dam in fall 2009 and spring and summer 2012. Iron concentrations were 1,770 µg/L (upstream) and 56.4 µg/L (downstream) in fall 2009, 27 µg/L (upstream) and 50 µg/L (downstream) in spring 2012, and 21 µg/L (upstream) and 1,760 µg/L (downstream) in summer 2012 (Yuba Water 2010a, 2013). Therefore, the SYRCL and Yuba Water data for Oregon Creek iron are somewhat consistent.

When sediment is released from a dam into a stream, the iron within those sediments is likely to oxidize to ferric iron (Fe^{3+}), which is less soluble, thus tends to form a floc that precipitates out as iron oxide (rust). This occurs due to the sudden exposure to oxygenated water, particularly if the reservoir behind the dam had low oxygen levels and contained iron in a reduced form (i.e., ferrous iron [Fe^{2+}]). The iron oxide floc is only a temporary effect of the oxidation process in oxygenated waters, is typically not toxic to aquatic life due to lack of bioavailability, and will eventually be washed away by natural processes.

In their study of iron toxicity to green algae, the cladoceran *Ceriodaphnia dubia*, and fathead minnow, Cardwell et al. (2023) found that exposures to high levels of total iron, greater than solubility limits, were necessary to illicit a toxic response in these organisms. Toxicity responses in test organisms were affected by water hardness, dissolved organic carbon, and pH. At water hardness of 86 mg/L (as $CaCO_3$), dissolved organic carbon of 2.1 mg/L, and a pH of 7.6, the 95 percent confidence interval about the 72-hour ten percent effect level (EC10) endpoint for growth of the green algae (i.e., a 10% reduction in growth relative to a control) was 5,330–6,811 µg/L total iron. For similar hardness, dissolved organic carbon, and pH levels, the EC10 for growth in fathead minnow and reproduction in *C. dubia* ranged from 2,915–31,314 µg/L total iron. These toxicity testing data show the very low toxicity of iron in most natural waters.

Oregon Creek pH is typically above 6.5, hardness generally varies from about 34–81 mg/L (as $CaCO_3$), and dissolved organic carbon tends to be rather high, ranging from about 5–9 mg/L (Yuba Water 2013). Therefore, iron low-level toxicity (i.e., 10% reduction in organism growth/reproduction) to the test organisms identified above would begin to occur in Oregon Creek at total iron concentrations within the range of 2,915–31,314 ug/L or higher because of the relatively high dissolved organic carbon levels. Because of the mediating effects of Oregon Creek's hardness, dissolved organic carbon, and pH on iron toxicity, toxic effects to aquatic life would likely not occur in the creek when total iron concentrations are 2,280 µg/L, which was the basis for the CWA Section 303(d) listing.

The EPA's iron criterion of 1,000 µg/L for aquatic life protection was first published in 1976 in the "Red Book" (EPA 1976). This criterion was derived primarily from a single field study where trout and other fish species in a polluted Colorado stream affected by acid mine drainage were found to be absent at concentrations exceeding 1,000 µg/L total iron (EPA 1976). Further justification of this criterion relied on acute laboratory toxicity tests for only a few freshwater fish species and a sensitive aquatic invertebrate. In the early 2000s, efforts were undertaken by Great Lakes Environmental Center (2004) to begin updating the criterion based on more relevant data and natural environmental factors affecting iron bioavailability. The study found that a concentration of 1,740 µg/L total iron will ensure propagation of aquatic life, which is the objective of national aquatic life criteria (Great Lakes Environmental Center 2004).

Based on the discussion above, the EPA's aquatic life criterion for iron of 1,000 µg/L may be overly restrictive because it does not reflect current science demonstrating that site-specific factors affect iron toxicity, particularly the lower toxicity of iron in natural waters. Considering data in the current scientific literature, Oregon Creek likely does not experience iron toxicity to aquatic life under the Existing Condition and likely would not experience iron toxicity upon implementation of the periodic sediment releases from Log Cabin Diversion Dam. Because the sediment releases would occur under high flow conditions and the sediments would be distributed downstream according to natural hydrogeomorphic processes, any iron oxide floc that may develop also would be distributed and not occur at levels that would cause clogging of fish gills or smothering of benthic invertebrates or fish eggs in the sediments. Based on these findings, implementation of the Sediment Management Plan would not make the CWA Section 303(d) listing for iron in Oregon Creek measurably worse.

Chromium. In environmental situations chromium (III) and chromium (VI) can inter-convert, with reduction of chromium (VI) to chromium (III) generally being favored in most environmental situations.

Chromium is CWA Section 303(d)-listed for the upper Yuba River reach from the confluence of the North Yuba River and Middle Yuba River to Englebright Reservoir. This listing is based on data reported to the SWRCB by SYRCL exceeding the state's drinking water maximum contaminant level (MCL) of 50 µg/L, which is applied in the Basin Plan as a water quality objective. Three samples collected over a one-month period in 2003 measured 31 µg/L, 54 µg/L, and 53 µg/L (SWRCB 2024). From a scientific and statistical perspective, this is not enough data to definitively indicate that the municipal and domestic water supply beneficial use designated for this river reach is impaired due to chromium concentrations. Furthermore, the drinking water MCL is applied as a running annual average, whereas the SRCYL data were not averaged to make the

impairment determination. Finally, these data are highly inconsistent with data collected by Yuba Water in 2009 and 2012 that showed total chromium concentrations in waterbodies from the upper Yuba River system to Marysville on the lower Yuba River to all be 0.5 µg/L or less (Yuba Water 2010a, 2013).

Periodic flushing of sediment from behind Our House Diversion Dam into the Middle Yuba River is not expected to change chromium levels in the upper Yuba River by magnitude and duration that would make the current CWA Section 303(d) listing for chromium measurably worse. This is because the occasional sediment flushes during high flow events will be re-distributed downstream along with the high sediment loads that flush through the system during the winter months annually and will not substantially change chromium concentrations in the downstream river channels on a long-term basis, which are on average less than the drinking water MCL.

Mercury. The bioavailable form of mercury is methylmercury. Mercury methylation is a process where mercury is converted into an organometallic methylmercury cation (CH_3Hg^+). Methylation of mercury occurs primarily in anoxic environments. Anaerobic sulfate-reducing bacteria at the sediment-water interface are primarily responsible for mercury methylation in aquatic systems. Iron-reducing bacteria also do this to a lesser degree. Mercury methylation occurs under anoxic conditions in sediments, flooded shoreline soils, and to a lesser degree in the water column (SWRCB 2017a, Alpers et al. 2008). Mercury is tightly bound to insoluble metal oxides under oxic conditions, but under anoxic conditions it is released and forms iron and manganese hydrous oxides. Increased methylmercury is also associated with wetting and drying cycles. This is likely due to oxidation of organic matter and sulfate under dry conditions. The oxidized materials fuel bacterial sulfate reduction once the soils are wetted and anoxia sets in after a few days (SWRCB 2017a).

The methylation process is affected by many factors, including the following.

- Physical/chemical factors: temperature, pH, redox potential, organic carbon (amount of and type), dissolved oxygen/redox, salinity, nutrients, sulfate/sulfides, suspended sediment, sediment grain size distribution, presence of other ions, mercury speciation, inorganic mercury sources, and demethylation rates.
- Biological factors: microbial communities, electron donor and acceptor abundance for microbial communities.
- Hydrodynamic factors: wetting/drying cycles or reservoir water fluctuations, stratification, turbulence affecting sediment resuspension, residence time, water depth.

Releases of mercury into Oregon Creek and the Middle Yuba River with sediment passage downstream of the Log Cabin Diversion Dam and Our House Diversion Dam, respectively, would be subject to oxygenated conditions. In such waters, the highly bioavailable methylmercury that accumulates in aquatic organisms is transformed into less bioavailable elemental mercury through microbial demethylation and photodemethylation. Mercury can also undergo biotransformation into methylmercury in the water column, but this methylation process predominantly occurs by anaerobic sulfate-reducing bacteria at the sediment-water interface. Thus, the less bioavailable elemental mercury form dominates in oxygenated surface waters.

The bioaccumulative fraction is of greatest concern because beneficial uses are not impaired by direct toxicity of mercury to aquatic life. The EPA's chronic water quality criterion for the protection of freshwater species is 770 nanograms per liter (ng/L) total mercury. In comparison, concentrations of total mercury in the Middle Yuba River in 2009 and 2012 ranged 0.65–2.03 ng/L and concentrations in Oregon Creek ranged 0.6–1.1 ng/L (Yuba Water 2010a, 2013). Likewise, reported surface water concentrations are well below the 50 ng/L CTR criterion for the protection of human health. Rather, mercury impairments are related to elevated concentrations in fish tissues that pose a risk to humans and aquatic-dependent wildlife that consume fish and are the most susceptible to neurotoxicity from mercury. The Statewide Sport Fish Water Quality Objective for the protection of human health and wildlife is 0.2 milligrams per kilogram (mg/kg) wet weight skinless fillet samples of trophic level 3, or trophic level 4 fish, whichever is highest in the waterbody (SWRCB 2017b). Fish tissue mercury in the Middle Yuba River collected 1980–1994 exceeded 0.2 mg/kg in Sacramento pikeminnow fillets but not in rainbow trout samples (SWRCB 2024).

The bioaccumulation of methylmercury up the food web (i.e., concentrations increase with higher trophic levels) is a process that takes weeks to months in fishes. Thus, fish tissues reflect long-term average methylmercury concentrations to which they are exposed and are not sensitive to short-term episodic changes in surface water concentrations, such as those that would occur with the sediment flushing. Sediment passage downstream would not occur over a sufficiently long duration for bioaccumulation up the food web to be reflected in fish tissues. In addition, such events would occur during high flows in the winter months when sediment transport would be similar to the Existing Condition.

Furthermore, total mercury concentrations in sediment impounded by the Our House Diversion Dam and the Log Cabin Diversion Dam are low. Total mercury concentrations in sediment sampled during a 1997 sediment removal event at Our House Diversion Dam were at natural background levels (Yuba Water 2018). Samples in 2018 were below reporting limits in six of ten samples and ranged 0.03–0.092 mg/kg dry weight in the three samples with detected concentrations (Yuba Water 2020). These concentrations are below the consensus-based threshold effect concentration of 0.18 mg/kg mercury, below which adverse effects are unlikely to occur (MacDonald et al. 2000).

Finally, any potential changes in surface water mercury concentrations associated with sediment passage downstream of the Log Cabin and Our House Diversion Dams would be subject to subject to water quality-related conditions in permits, such as the SWRCB's CWA Section 401 WQC for the YRDP, that would require compliance with water quality objectives for mercury.

Based on the above findings, periodic releases of sediment from Log Cabin and Our House Diversion Dams would not result in a substantial increase, if any increase, in surface water or fish tissue mercury concentrations in Oregon Creek, Middle Yuba River, or downstream waterbodies and, thus, would not cause toxicity to aquatic life, aquatic dependent wildlife, and human health or make the existing CWA Section 303(d) impairment for mercury in the upper Yuba River or downstream waterbodies measurably worse.

Mechanical Removal of Sediment

Mechanical removal of sediment would occur during the drier months when inflows are low. The pool of water behind the dams would be drawn down and inflows would be diverted around the area to be excavated so that sediment removal would occur in the dry, meaning flowing water would not be present.

Sediment removal events occurred at Log Cabin Diversion Dam in 1972, 1997, 2014, and 2017. Sediment removal events at Our House Diversion Dam occurred in 1986, 1992, 1997, 2006, and 2017, thus this activity occurs under the Existing Condition. Sediment was tested for mercury during the 1997 removal event and levels were found to be at natural background levels (Yuba Water 2018).

Sediment would be tested for metals and characterized prior to removal to determine if the sediment can be stockpiled or must be handled as hazardous material in accordance with applicable local, state, and federal regulations. BMPs would be implemented to minimize effects to water quality, including stabilization of disturbed soils, use of erosion control measures, spill prevention and containment measures, no operation of heavy equipment or excavation in flowing water, cessation of work if downstream turbidity or dissolved oxygen levels are outside of water quality objectives, and reseeding of areas left barren from equipment use to achieve 70 percent uniform ground cover (Yuba Water 2018). Sediment removal also would be subject to water quality-related conditions in permits, such as the SWRCB's CWA Section 401 WQC for the YRDP and Construction Stormwater General Permit if one or more acre would be disturbed.

With implementation of the BMPs and compliance with permits required to remove the sediment, pollutant discharges to surface waters would be minimized and controlled such that sediment removal would not cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies.

Removal of sediment from Oregon Creek and Middle Yuba River would result in trace metals and mercury trapped in the sediments also being removed from the channels. Therefore, the mechanical removal of sediment would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in Oregon Creek (copper and iron) or upper Yuba River (mercury and chromium), or any other water quality constituents.

Sediment Stockpiling

Placement of sediment at stockpile sites has the potential to disturb soils and result in runoff of sediment at the sites. However, such activities would be temporary and short-term and would not be likely to result in substantial soil erosion or loss of topsoil. Silt fencing would be installed at the perimeter of the stockpile area to minimize runoff of sediment. The surface of the stockpile would be compacted and hydroseeded for long-term erosion control. With implementation of these control measures, sediment stockpiling would not cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies.

CEQA Conclusion

Based on the above analysis, implementation of the *Log Cabin and Our House Diversion Dams Sediment Management Plan* would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Project Area waterbodies. Furthermore, implementation of the Sediment Management Plan would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies. Therefore, the impacts on surface water quality from implementing the *Log Cabin and Our House Diversion Dams Sediment Management Plan* would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-4: Impacts on Surface Water Quality from Other YRDP Implementation Plans.

A component of the YRDP is several implementation plans, identified in Chapter 2, Section 2.7.1.5, "Summary of FERC-Approved YRDP Implementation Plans," that are intended to improve the Existing Condition and provide benefits overall to environmental resources. Some implementation plans involve activities that could affect surface water quality, either adversely through potential discharge of pollutants or beneficially through control of discharges and pollutants, and other implementation plans would have little to no effect on surface water quality because the plans would involve little to no interaction with Project Area waterbodies. Impacts on surface water quality from the *Recreation Facilities Plan*, which is one of the YRDP implementation plans, are addressed separately in YRDP Impact WQ-PP-2. Impacts on surface water quality from the *Log Cabin and Our House Diversion Dams Sediment Management Plan*, another YRDP implementation plan, are addressed separately in YRDP Impact WQ-PP-3.

Table 8.5-3 lists the implementation plans that would have minimal to no impact on surface water quality because the plan activities would not involve the handling of pollutants that could be discharged to surface waters, would not disturb land such that there would an increased potential for erosion and introduction of suspended solids into surface waters, or would not affect stream flows such that there would be flow-related changes to water quality relative to activities that occur under the Existing Condition.

Table 8.5-3. YRDP Implementation Plans That Would Have Minimal or No Impact on Surface Water Quality.

YRDP Implementation Plan (Yuba Water Designation)	Rationale for Concluding Plan Would Have Minimal to No Impact on Surface Water Quality
Bald Eagle and American Peregrine Falcon Management Plan (TR2)	• Plan implementation would not introduce pollutants that would degrade water quality; plan focus is on monitoring and protecting birds and nests.
Bat Management Plan (TR4)	• Plan implementation would not introduce pollutants that would degrade water quality; plan focus is on monitoring and excluding bats from facilities.
Drought Management Plan (WR9)	• Plan implementation would not introduce pollutants that would degrade water quality; plan focus is on flow management decisions during droughts.
Fire Prevention and Response Plan (LU2)	• Plan implementation would not introduce pollutants that would degrade water quality; plan focus is on procedures for reporting and preventing fires.
Historic Properties Management Plan (CR1)	• Plan implementation would not introduce pollutants that would degrade water quality; plan focus is on treatment and management of cultural resources.

YRDP Implementation Plan (Yuba Water Designation)	Rationale for Concluding Plan Would Have Minimal to No Impact on Surface Water Quality
Lower Yuba River Aquatic Monitoring Plan (AR8)	• Sediment disturbance would be associated with monitoring of fish, riparian vegetation cover, channel substrate, and benthic macroinvertebrates, and would be temporary and limited spatially to areas in which samples are collected, which would result in negligible, temporary disturbance of sediment from personnel wading into surface waters.
Lower Yuba River Restoration Plan	• Planting 100 acres of riparian vegetation would result in minimal disturbance of soils and result in improved shoreline stability.
New Bullards Bar Reservoir Fish Stocking Plan (AR6)	• This action would not introduce pollutants that would degrade water quality; plan is focused on fish stocking, which occurs under the Existing Condition.
Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan (GS3)	• This action would not introduce pollutants that would degrade water quality; plan is focused on allowing woody material to pass downstream of dams.
Ringtail Management Plan (TR3)	• This action would not introduce pollutants that would degrade water quality; plan focus is on installing devices to exclude ringtail from YRDP facilities.
Upper Yuba River Aquatic Monitoring Plan (AR7)	• Sediment disturbance would be associated with monitoring of fish, benthic macroinvertebrates, and other aquatic life, and would be temporary and limited spatially to areas in which samples are collected, which would result in negligible, temporary disturbance of sediment from personnel wading into surface waters.
Visual Resources Management Plan (VR1)	• This action would not introduce pollutants that would degrade water quality; plan is focused on painting facilities to improve aesthetics and blend with surrounding areas. BMPs and permits to ensure that paints are not introduced into waterbodies are addressed under YRDP Impact WQ-PP-1.
Water Temperature Monitoring Plan (WR7)	• This action would not introduce pollutants that would degrade water quality; plan is focused on personnel installing temperature loggers and periodically downloading data, which would result in negligible, temporary disturbance of sediment from personnel wading into surface waters.
Water Quality Monitoring Plan (WR8)	• This action would not introduce pollutants that would degrade water quality; plan is focused on personnel collecting water quality data using in-situ measuring devices and sample collection containers, which would result in negligible, temporary disturbance of sediment from personnel wading into surface waters.

Table 8.5-4 presents the implementation plans with components that have the potential to temporarily degrade water quality of Project Area waterbodies.

Table 8.5-4. YRDP Implementation Plans With Potential to Temporarily Degrade Surface Water Quality.

YRDP Implementation Plan	Elements Relevant to Water Quality	Affected Waterbody	Resulting Effect on Water Quality
Aquatic Invasive Species Management Plan (AR5)	• Control/eradication measures may involve chemical applications and manual removal from sediments.	• New Bullards Bar Reservoir • Log Cabin Diversion Dam Impoundment • Our House Diversion Dam Impoundment • North Yuba River • Willow Creek (upstream to the outlet of the Camptonville tunnel outlet) • Little Oregon Creek • Indian Creek • Mill Creek • Lost Creek • Slate Creek.	• Introduction of chemicals or herbicides into water column. • Temporary elevated turbidity and TSS levels.

YRDP Implementation Plan	Elements Relevant to Water Quality	Affected Waterbody	Resulting Effect on Water Quality
Large Woody Material Management Plan	• Placement of large woody debris in the lower Yuba River.	• Lower Yuba River	• Temporary elevated turbidity and TSS levels.
Narrows Reach Fish Stranding Prevention Plan	• Potential structural measures to reduce fish stranding events.	• Lower Yuba River	• Spill of concrete, toxic chemicals and other hazardous materials on land that could potentially enter adjacent waterbodies during construction.
Streamflow and Reservoir Level Compliance Monitoring Plan	• Maintenance of existing USGS gages. • Modification of three USGS gages.	• New Bullards Bar Reservoir • Middle Yuba River • Oregon Creek	• Temporary elevated turbidity and TSS levels.
Transportation System Management Plan (LU1)	• Road, ditch, and culvert improvements.	• New Bullards Bar Reservoir • Middle Yuba River • Oregon Creek • Miscellaneous local drainages	• Temporary, elevated turbidity and TSS levels.

TSS = total suspended solids; USGS = U.S. Geological Survey

Implementation of the *Aquatic Invasive Species Management Plan* may result in the use of aquatic herbicides or other chemical treatment to reduce or eliminate invasive species. Chemical treatment application would have to be in compliance with local, state, and federal regulations, and consistent with the registered use of the treatment regarding application rates and monitoring. These factors would minimize the potential for chemical concentrations to reach levels that would have unintended adverse effects on Project Area waterbody beneficial uses. Manual removal of invasive species could result in temporary suspension of sediments, resulting in localized increases in turbidity and TSS levels. However, once work in an area is complete, the turbidity and TSS levels would return to normal ambient levels.

Implementation of the *Large Woody Material Management Plan* may result in temporary, localized elevated turbidity and TSS levels in areas where large woody material is collected, as well as when it is placed. This plan would not result in the introduction of pollutants to waterways. If heavy equipment would be involved in the collection and placement of large woody material, the risks to water quality would be from accidental discharge or spills of fuel.

Similarly, implementation of the *Streamflow and Reservoir Level Compliance Monitoring Plan* may result in temporary, localized elevated turbidity and TSS levels during maintenance of existing monitoring gages. Temporary, localized elevated turbidity and TSS levels may also occur during installation of new gages. Spills from equipment that may be required for gage installation would pose a risk to water quality.

The installation of structures that may be needed to implement the *Narrows Reach Fish Stranding Prevention Plan* could result in temporary, localized elevated turbidity and TSS levels and risk of spills into receiving waters.

Finally, the road rehabilitation and maintenance activities to be implemented for the *Transportation System Management Plan* could similarly result in temporary, localized elevated

turbidity and TSS levels and risk of spills into receiving waters where work is conducted at or in the vicinity of stream crossings.

The potential for degradation of surface water quality with implementation of the *Large Woody Material Management Plan, Streamflow and Reservoir Level Compliance Monitoring Plan,* and *Transportation System Management Plan* would be reduced with implementation of the *Erosion and Sediment Control Plan, Hazardous Materials Management Plan, and Integrated Vegetation Management Plan*. The elements of these plans related to water quality protection and resulting effects on water quality are listed in Table 8.5-5.

Table 8.5-5. YRDP Implementation Plans With Potential to Reduce Impacts on Surface Water Quality.

YRDP Implementation Plan	Elements Relevant to Water Quality	Resulting Effect on Water Quality
Erosion and Sediment Control Plan (GS1)	• BMPs for control of erosion and sedimentation during routine maintenance and emergency erosion threats. • Forest Service BMPs for maintenance on National Forest land.	• Reduces potential for discharge of suspended sediment to adjacent waterbodies, thus also reducing the potential for discharge of on-site contaminants and reducing potential for increased turbidity and TSS levels in adjacent waterbodies
Hazardous Materials Management Plan (WR1)	• Database of hazardous materials stored, used or transported for routine O&M. • Training in the safe handling of hazardous materials and cleanup of spills. • Vehicles and equipment not maintained or refueled where hazardous materials may enter a watercourse. • Storage of hazardous materials in place where they cannot enter a watercourse. • Cleanup and spill materials within 3 hours of each facility.	• Reduces likelihood of a spill of toxic chemicals and other hazardous materials occurring on-site and reduces likelihood of contaminants from a spill being discharged to adjacent waterbodies.
Integrated Vegetation Management Plan (TR1)	• Restoration of native vegetation in disturbed areas subject to continual disturbance	• Reduces potential for discharge of suspended sediment to adjacent waterbodies, thus also reducing the potential for discharge of on-site contaminants and reducing potential for increased turbidity and TSS levels in adjacent waterbodies

BMPs = best management practices; TSS = total suspended solids

None of the YRDP implementation plans discussed above would involve actions that would substantially alter the existing drainage pattern of the site. Implementation of the *Erosion and Sediment Control Plan* and *Integrated Vegetation Management Plan* along with use of applicable BMPs and consistent achievement of regulatory compliance would ensure that turbidity and TSS levels would not reach sufficiently high levels for a sufficiently long period of time to cause related adverse effects on waterbody beneficial uses. Likewise, implementation of the *Hazardous Materials Management Plan* and applicable BMPs would ensure that accidental discharge or spills of fuel from use of heavy equipment in or immediately adjacent to waterbodies would not occur with frequency or magnitude to cause adverse contaminant-related impacts to waterbody beneficial uses.

Activities conducted for these implementation plans have the potential to overlap in time with each other, the construction activities addressed in YRDP Impact WQ-PP-1, the *Recreation Facilities Plan* activities addressed in YRDP Impact WQ-PP-2, as well as routine O&M addressed in YRDP Impact WQ-PP-13. However, the potential effects to water quality described above would not combine with these other project components to result in conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies due to the relatively short duration and geographic separation of the activities in the watershed.

CEQA Conclusion

Based on the above analysis, implementation of the other YRDP implementation plans[7] would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of Project Area waterbodies. Furthermore, implementation of the other YRDP implementation plans would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies. Therefore, the impacts on surface water quality from implementation of other YRDP implementation plans would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of the YRDP.

The analysis below addresses impacts on New Bullards Bar Reservoir water quality from operating the YRDP Relicensing Project. Operation of the YRDP does not involve alteration of existing drainage patterns around New Bullards Bar Reservoir. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Reservoir water quality is affected, in part, by the quality and quantity of reservoir inflows and nonpoint watershed runoff, which in turn are affected, in part, by precipitation and upstream watershed land use activities. The YRDP Relicensing Project would not affect precipitation and upstream watershed land uses. North Yuba River inflow, which averages 560,000 ac-ft (Yuba Water 2010b, Table 2.1-1), also would be unaffected. Therefore, external contributions of constituents to New Bullards Bar Reservoir from these sources with the YRDP Relicensing Project would not differ from the Existing Condition due to project operations. YRDPM output shows that inflow via Camptonville Tunnel, which averages 185,000 ac-ft under the Existing Condition, would be reduced by an average 28 percent, due to more water remaining in the Middle Yuba River. As such, there would be reduced loading of constituents from this inflow source.

Reservoir water quality also can be affected by reservoir storage and water surface elevation, which may be affected by operation of the YRDP Relicensing Project. Reservoir storage can affect the dilution of watershed runoff and tributary inflows, which in turn can affect reservoir constituent

[7] YRDP implementation plans listed in Section 2.7.1.5, "Summary of FERC-Approved YRDP Implementation Plans" other than the *Recreation Facilities Plan* and *Log Cabin and Our House Diversion Dams Sediment Management Plan*.

concentrations. Reservoir water surface elevation can affect internal physical processes, such as temperature gradients from the water surface to the sediment, which in turn can affect other water quality parameters, such as dissolved oxygen and nutrient cycling conditions.

Temperature, dissolved oxygen, nutrients, and mercury would be the water quality constituents most affected by changes in reservoir end-of-month storage and water surface elevation. As such, these constituents are discussed further below. Other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) would be negligibly affected by the modeled differences in reservoir end-of-month storage and water surface elevation and instead would be most affected by external source contributions, which would not be changed by the YRDP Relicensing Project.

Changes in Reservoir Storage and Water Surface Elevation

Modeling results show small differences in New Bullards Bar Reservoir average end-of-month storage with the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Reservoir-1). Average end-of-month storage with the YRDP Relicensing Project for the full simulation period is 1 percent lower in December, January, and May, and 0 percent different compared to the Existing Condition for the other nine months. Average end-of-month storage with the YRDP Relicensing Project also differed little by water year type, with the difference being 0 percent in critical years, 1 percent in dry years, 1–2 percent in below normal years, 0–1 percent in above normal years, and 0–2 percent in wet years compared to the Existing Condition.

Modeling results also show small differences in end-of-month water surface elevation with the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Reservoir-2). Average end-of-month water surface elevation with the YRDP Relicensing Project for the full simulation period is 1 foot lower in December, January, and April through July, and no different for the other months compared to the Existing Condition. Average end-of-month water surface elevation with the YRDP Relicensing Project also differed little by water year type, with the difference being 1 foot lower to 1 foot higher in critical years, 1–2 feet lower in dry years, 1 foot lower to 3 feet higher in below normal years, 1 foot lower to 1 foot higher in above normal years, and 0–3 feet lower in wet years compared to the Existing Condition.

Temperature and Dissolved Oxygen

Dissolved oxygen concentrations in reservoirs are primarily affected by water temperature and amounts of oxygen-demanding substances present (e.g., organic matter in the water column and sediment). Water temperature affects oxygen solubility, with colder waters able to contain higher oxygen concentrations than warmer waters. Water temperature also affects the depth at which oxygenated inflows enter the reservoir. Colder inflows tend to move deep into the reservoir due to it having higher density, whereas warm water inflows tend to mix with the surface waters, particularly when the reservoir is thermally stratified during the late spring, summer and early fall months. High nutrient content can support aquatic plant and algae growth, which in turn generate oxygen during the day through photosynthesis and consume oxygen at night through respiration. During summer months, thermal stratification can cause dissolved oxygen to become depleted at the sediment water interface because there is little to no transfer of oxygen in the upper layer to the bottom of the reservoir.

With operation of the YRDP Relicensing Project, New Bullards Bar Reservoir would continue to thermally stratify seasonally as it does under the Existing Condition, with minimal effects on the elevation of the thermocline (i.e., the transition zone between the upper warm layer and lower, cool layer) given that the modeled differences in water surface elevation are 0–3 feet. With minimal effect on the reservoir temperature profile, dissolved oxygen concentrations in the reservoir's upper layer (called the epilimnion) and lower layer (called the hypolimnion) would be very similar to the Existing Condition. Finally, given the surface area of the reservoir would be very similar to the Existing Condition, wind fetch would continue to be substantial source of reaeration to maintain oxygen levels in the upper layer of the reservoir.

Thus, the differences in end-of-month storage and water surface elevation that could occur in some months with operation of the YRDP Relicensing Project would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles or otherwise cause more frequent dissolved oxygen depletions in the lower layer of the reservoir compared to the Existing Condition.

Nutrients

The reservoir nutrients addressed in this discussion are phosphorus and nitrogen because they tend to be the dominant rate-limiting nutrients in reservoirs. As described above, external source contributions of constituents to New Bullards Bar Reservoir with the YRDP Relicensing Project would not differ from the Existing Condition. Likewise, operation of the YRDP Relicensing Project would have negligible, if any, effect on aquatic life populations within the reservoir, which release nutrients to the water column and sediments when such life dies and decomposes. Hence, this internal source of nutrients to the water column and sediments would differ negligibly, if at all, from the Existing Condition with operation of the YRDP Relicensing Project.

Internal phosphorus loading in reservoirs is driven largely by thermal stratification. Lack of oxygen within the hypolimnion allows sediment-bound phosphorus to be released into the water column. As discussed above, the YRDP Relicensing Project would have minimal effects on the New Bullards Bar Reservoir thermocline and dissolved oxygen conditions relative to the Existing Condition. As such, internal phosphorus cycling processes in the reservoir would not differ substantially, if at all, from the Existing Condition.

Nitrogen in freshwater ecosystems readily undergoes many transformations from one form to another, between dissolved inorganic nitrogen (i.e., ammonium, nitrate, and nitrite), dissolved organic compounds, and particulate forms (Horne and Goldman 1994:135–145). These transformations occur through oxidation and reduction processes that are mainly mediated by microorganisms (Horne and Goldman 1994:135–145). As described above, reservoir dissolved oxygen conditions would not differ substantially, if at all, from the Existing Condition. As such, internal nitrogen cycling processes in the reservoir also would not differ substantially, if at all, from the Existing Condition.

Mercury

New Bullards Bar Reservoir is on the SWRCB's CWA Section 303(d) list of impaired waterbodies due to impairments from mercury (refer to Table 8.2-2 in Section 8.2.2). As described in further detail in YRDP Impact WQ-PP-3, the primary concern with mercury is bioaccumulation in the

aquatic food web, which poses the greatest risk to humans and aquatic-dependent wildlife that consume fish.

Of the factors that affect methylation processes (refer to discussion in YRDP Impact WQ-PP-3), operation of the YRDP Relicensing Project would affect reservoir storage or water surface elevation. As discussed previously, operation of the YRDP Relicensing Project would not result in substantial, if any, changes in reservoir temperature, dissolved oxygen or nutrients. Similarly, operation of the YRDP Relicensing Project would have little to no effect on salinity-related parameters, suspended sediment, organic carbon, and pH, as it would not affect internal or external sources of these constituents. Furthermore, based on the modeled differences in storage and water surface elevation, operation of the YRDP Relicensing Project would have little to no effect on the reservoir stratification, residence time, and water depth. This is because the basic approach to YRDP operations that occurs under the Existing Condition would occur with the YRDP Relicensing Project. The YRDP would continue to be operated largely as it is now and water surface elevation fluctuations would occur within the same range and at a similar frequency such that YRDP wetting and drying of soils in the reservoir would differ little, if at all, from the Existing Condition. Based on the parameter-specific findings described above, reservoir water column and sediment microbial communities would not differ substantially, if at all, for the YRDP Relicensing Project relative to the Existing Condition. Therefore, operation of the YRDP Relicensing Project would not produce long-term measurable increases in methylmercury within New Bullards Bar Reservoir.

Nevertheless, one of the proposed conditions for the CWA Section 401 WQC is Condition 19, "Mercury Management" (refer to Appendix 2E). This WQC condition would involve evaluating water quality and fish tissue data to determine if operations increase mobilization and methylation of mercury. If project operations are determined to increase mobilization and methylation of mercury, then a Mercury Management Plan would be developed in consultation with SWRCB and CVRWQCB staff and comply with the "Tribal Subsistence Beneficial Uses and Mercury Provisions of the Inland Surface Waters, Enclosed Bays, and Estuaries Plan" (SWRCB 2017b). The Mercury Management Plan would include a review of potential measures to reduce the amount of methylmercury or rate of mercury methylation in the watershed as effected by the Project (such as changes to Project operations related to power generation, reservoir management, sediment dredging, and/or sediment capping), and an examination of implementation measures feasibility. The Mercury Management Plan would also describe any necessary measures to protect human health from exposure through fish consumption (such as posting health warnings at reservoirs, operating recreational fishing as catch-and-release only, or ceasing to stock reservoirs) (Appendix 2E). With implementation of this WQC condition, beneficial uses would be further protected from any potential increases in methylmercury from project operations.

In summary, operation of the YRDP Relicensing Project would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) in New Bullards Bar Reservoir compared to the Existing Condition. As such, operation of the YRDP Relicensing Project would not cause exceedance of a reservoir water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial

uses of the reservoir. Furthermore, operation of the YRDP Relicensing Project would not cause measurable degradation for the CWA Section 303(d)-listed constituents in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in New Bullards Bar Reservoir. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to New Bullards Bar Reservoir. Therefore, impacts on New Bullards Bar Reservoir water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-6: Impacts on Englebright Reservoir Water Quality from Operation of the YRDP.

The analysis below addresses impacts on Englebright Reservoir water quality from operating the YRDP Relicensing Project. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns around Englebright Reservoir. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

As discussed in YRDP Impact WQ-PP-5 for New Bullards Bar Reservoir, Englebright Reservoir water quality is affected, in part, by the quality and quantity of reservoir inflows and nonpoint watershed runoff, which in turn are affected, in part, by precipitation and upstream watershed land use activities. The YRDP Relicensing Project would not affect precipitation and upstream watershed land uses. Upper Yuba River inflow also would be very similar to the Existing Condition (refer to Appendix 4C, Table C1-Flow-13). Therefore, external contributions of constituents (e.g., organic compounds, pesticides, trace metals, and other pollutants) to Englebright Reservoir from these sources with the YRDP Relicensing Project would not differ from the Existing Condition due to operations.

Also as discussed for New Bullards Bar Reservoir in YRDP Impact WQ-PP-5, Englebright Reservoir water quality can be affected by reservoir storage and water surface elevation, with temperature, dissolved oxygen, nutrients, and mercury being the water quality constituents most affected by changes in reservoir end-of-month storage and water surface elevation.

Modeling results show little to no difference in Englebright Reservoir average end-of-month storage with the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Reservoir-3). The difference between average end-of-month storage with the YRDP Relicensing Project for the full simulation period and the Existing Condition is 0 percent. Average end-of-month storage is about 44,000–46,000 ac-ft, depending on month, and differences in end-of-month storage average less than 100 ac-ft.

Modeling results also show little to no difference in end-of-month water surface elevation with the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-

Reservoir-4). The difference in average end-of-month water surface elevation with the YRDP Relicensing Project for the full simulation period compared to the Existing Condition is less than 1 foot. Average end-of-month water surface elevation with the YRDP Relicensing Project also differed little by water year type, with the difference being 1 foot or less depending on month and water year type.

Because there would be little to no change in Englebright Reservoir end-of-month storage and water surface elevation, operation of the YRDP Relicensing Project would not result in substantial, if any, changes in reservoir temperature, dissolved oxygen or nutrients. Similarly, operation of the YRDP Relicensing Project would have little to no effect on salinity-related parameters, suspended sediment, organic carbon, and pH, as it would not affect internal or external sources of these constituents. Furthermore, based on the small differences in modeled storage and water surface elevation, operation of the YRDP Relicensing Project would have little to no effect on the reservoir stratification, residence time, and water depth. This is because the basic approach to YRDP operations that occurs under the Existing Condition would occur with the YRDP Relicensing Project. The YRDP would continue to be operated largely as it is now and water surface elevation fluctuations would occur within the same range and at a similar frequency such that YRDP wetting and drying of soils in the reservoir would differ little, if at all, from the Existing Condition. Finally, as described further in Impact WQ-PP-5, one of the proposed conditions of the CWA Section 401 WQC is Condition 19, Mercury Management (Appendix 2E) to ensure beneficial uses would be protected from increases in methylmercury from project operations. Therefore, operation of the YRDP Relicensing Project would not result in a long-term measurable increase in mercury in the North Yuba River below New Bullards Bar Dam. Therefore, operation of the YRDP Relicensing Project would not produce long-term measurable increases in methylmercury within Englebright Reservoir.

As such, operation of the YRDP Relicensing Project would not cause exceedance of a Englebright Reservoir water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the reservoir. Furthermore, operation of the YRDP Relicensing Project would not cause long-term measurable degradation for the CWA Section 303(d)-listed constituents in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Englebright Reservoir. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Englebright Reservoir. Therefore, impacts on Englebright Reservoir water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of the YRDP.

The analysis below addresses impacts of operation of the YRDP Relicensing Project on the water quality of the North Yuba River from New Bullards Bar Dam to the confluence with the Middle Yuba River, which is approximately 2 miles downstream of the dam. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns in this reach of the North Yuba River. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Water quality in the North Yuba River downstream of New Bullards Bar Dam is primarily affected by the quality of the water released from the reservoir. Water quality in this reach also is affected by river flow rates, which are affected by dam release rates. River flow rate affects water temperature, reaeration processes that affect dissolved oxygen levels, and sediment suspension and transport.

As discussed in YRDP Impact WQ-PP-5, operation of the YRDP Relicensing Project would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) in New Bullards Bar Reservoir compared to the Existing Condition. Furthermore, operations would not affect the level that water is released from the reservoir. Therefore, the quality of water released into the North Yuba River would be similar to, and likely nearly the same as, the water quality under the Existing Condition.

Modeled monthly average North Yuba River flow rates are higher with operation of the YRDP Relicensing Project during July through November over the entire simulation period and across all water year types compared to the Existing Condition (refer to Appendix 4C, Table C1-Flow-5). In July through November, modeled monthly average flow rates below the dam range from 8–9 cubic feet per second (cfs) for the Existing Condition and 14–43 cfs for the YRDP Relicensing Project for the full simulation period. The average flow increase in these months ranges from 6–34 cfs. In December through June, modeled monthly average flow rates are lower with operation of the YRDP Relicensing Project. In these months, the modeled monthly average flow rate ranges from 168–657 cfs for the Existing Condition and 120–642 cfs for the YRDP Relicensing Project.

The changes in the North Yuba River flow rate downstream of New Bullards Bar Dam would alter the temperature regime in this reach. Modeled monthly average temperatures below the dam range from about 45–53°F for the Existing Condition and about 45–51°F for the YRDP Relicensing Project for the full simulation period (refer to Appendix C, Table C1-Temp-6). Modeled monthly average temperatures are about 4–6°F lower in June through September compared to the Existing Condition. In December, January, April, and May, modeled monthly average temperatures differ from the Existing Condition by 0.0–0.1°F.

Temperature reductions in the North Yuba River at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 9–14°F lower with operation of the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Temp-7). Modeled monthly average

temperatures at the confluence range from about 45–68°F for the Existing Condition and 45–61°F for the YRDP Relicensing Project for the full simulation period.

As water temperatures decrease, dissolved oxygen saturation levels increase. When holding constant for barometric pressure (i.e., 760 millimeters mercury), the saturation level ranges from 12 mg/L at 45°F to 9 mg/L at 68°F (Tchobanoglous and Schroeder 1987:p. 735). Turbulence and interaction of river water with the atmosphere that reaerates the river and maintains dissolved oxygen saturation levels would continue to occur with operation of the YRDP Relicensing Project. Therefore, the dissolved oxygen conditions in the North Yuba River below New Bullards Bar Dam with operation of the YRDP Relicensing Project would not differ substantially, if at all, from the Existing Condition.

The higher river flow rates compared to the Existing Condition would primarily occur in the summer months, when flow rates are relatively low (i.e., less than 100 cfs). Higher summer flow rates could result in higher turbidity or TSS, depending on the presence of fine sediment in the channel. However, summer flow rates are comparatively lower than winter flow rates that can reach greater than 30,000 cfs, when most of the sediment transport takes place. Therefore, increases in summer flow rates with operation of the YRDP Relicensing Project are not anticipated to result in substantial, if any, increases in river turbidity or TSS compared to the Existing Condition.

The North Yuba River is on the SWRCB's CWA Section 303(d) list of impaired waterbodies for impairments associated with mercury (refer to Table 8.2-2 in Section 8.2). The factors that affect mercury methylation are described in YRDP Impact WQ-PP-3. As just described, operation of the YRDP Relicensing Project is not expected to result in substantial, if any, differences in dissolved oxygen or TSS levels, thus measurable differences in other water quality constituents (e.g., salinity-related parameters, nutrients, trace metals, organic carbon) are not expected. Furthermore, the high flows that result in sediment transport in the winter months would continue similar to the Existing Condition. Therefore, the factors that affect mercury methylation would not change substantially, if at all, relative to the Existing Condition. Finally, as described further in Impact WQ-PP-5, one of the proposed conditions of the CWA Section 401 WQC is Condition 19, Mercury Management (Appendix 2E) to ensure beneficial uses would be protected from increases in methylmercury from project operations. Therefore, operation of the YRDP Relicensing Project would not result in a long-term measurable increase in mercury in the North Yuba River below New Bullards Bar Dam.

As such, operation of the YRDP Relicensing Project would not cause exceedance of a North Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of the YRDP Relicensing Project would not cause long-term measurable degradation for the CWA Section 303(d)-listed constituents in the river.

As explained in Chapter 2, Yuba Water separately proposed construction of the ARC Spillway, which would ultimately be included in the new YRDP FERC license. Yuba Water previously analyzed the water quality impacts of operating the ARC Spillway in the ARC Spillway EIR and determined there could be potentially significant impacts to North Yuba River water quality from

drainage water discharges and erosion from use of the spillway, but that those impacts could be mitigated to a less-than-significant level (Yuba Water 2024). The analysis of those impacts in the ARC Spillway EIR is incorporated by reference.[8] Based on the small modeled flow differences described above and presented in Appendix 4C, Table C1-Flow-5 and Figures C1-Flow-13 through C1-Flow-24, ARC Spillway operations under the YRDP Relicensing Project would not result in any new or more severe potentially significant impacts compared to the impacts under the existing YRDP FERC license identified in the ARC Spillway EIR. Yuba Water previously identified and adopted mitigation measures (including one mitigation measure requested by the SWRCB) to reduce the water quality impacts associated with ARC Spillway operations to a less-than-significant level. As explained in Chapter 2, these previously adopted mitigation measures for ARC Spillway operations have been incorporated into the YRDP Relicensing Project and will continue to apply to ARC Spillway operations under the YRDP Relicensing Project. These mitigation measures are included below.

ARC Spillway Mitigation Measure HWQ-2: Obtain Coverage and Comply with Requirements of the General Order for Limited Threat Discharges to Surface Water (NPDES No. CAG995002/ Order R5-2016-0076-01)

Construction and operations involving dewatering will be subject to Central Valley RWQCB's Waste Discharge Requirement (WDR) R5-2016-0076-01 requirements for managing wastewater produced during dewatering activities or drainage collected during operation of the ARC Spillway. To obtain coverage under this General Order, which also serves as the NPDES Permit, the Discharger must submit a complete Notice of Intent and provide samples for analysis to determine the quality of the discharge (using tiers) and assign appropriate controls that will apply to the permit.

Yuba Water or its contractor(s) will obtain coverage under one or more of the following permit tiers, as applicable:

- Tier 1: Clean or relatively pollutant-free wastewaters that pose little or no threat to water quality.
  - Tier 1A: Discharges of less than 0.25 million gallons per day (MGD) or less than 4 months in duration, and
  - Tier 1B: Discharges greater than or equal to 0.25 MGD and greater than or equal to 4 months in duration.
- Tier 2: Discharges that may contain toxic organic constituents, volatile organic compounds, petroleum fuel pollution constituents, pesticides, inorganic constituents, chlorine, and/or other chemical constituents that require treatment prior to discharge.

Yuba Water or its contractor(s) will submit a separate Notice of Intent under the General Order for applicable construction and/or operation activities.

Timing: Before construction activities.

[8] https://www.yubawater.org/252/ARC-Spillway-at-New-Bullards-Bar-Dam

Responsibility: Yuba Water and its construction contractor(s).

ARC Spillway Mitigation Measure HWQ-4: Regularly Inspect the ARC Spillway Discharge Channel for Erosion

Following construction, the ARC Spillway discharge channel will be inspected for erosion on a regular basis. Multiple inspections will occur each year during the first 5 years of service. Inspections will be conducted immediately or as soon as possible after the first few spill events. These initial inspections of the discharge channel will include the following items:

- Verify and document that the discharge channel is clear and unobstructed by vegetation, soil/rock deposits, or debris to ensure full passage of flood flows.
- Examine the foundation at the toe of the spillway concrete structure (the toe of the flip bucket) for evidence of undercutting.
- Locate and map significant erosional features (deeper than 10 feet measured perpendicular to the slope of the hillside) observed on the channel bottom. Measure the depth (perpendicular to the slope) and width (across the eroded seam) at various points along the feature. Record for replication of measurements during subsequent inspections and trending analysis of the measurements.

After the first 5 years of operation, an annual inspection will be conducted as long as there are no issues in the first 5 years, including the following:

- The discharge channel remains clear and unobstructed by vegetation, soil/rock deposits, or debris to ensure full passage of flood flows.
- The discharge channel invert at the toe of the flip bucket does not show undercutting features deeper than 5 feet.
- Significant erosional features (deeper than 10 feet measured perpendicular to the slope of the hillside) observed on the channel bottom are not increasing in depth or width at a rate greater than 2 feet per year.

An aerial Light Detection and Ranging (LiDAR) survey of the ARC Spillway will be conducted after construction (and prior to operation) to document as-built conditions of the discharge channel and establish a baseline topographic surface that can be used to compare with subsequent surveys. These surveys will be repeated on a 10-year basis and supplemented with drone surveys to obtain high resolution aerial imagery. Analysis of the LiDAR data and aerial imagery will be performed by a qualified engineering geologist or engineer to monitor erosion trends.

An analysis of erosion features at the existing Primary Spillway indicated two major areas of erosion with maximum depth of erosion measured normal to the slope of about 40 feet at one area and approaching 60 feet at another area. If areas of new, concentrated erosion are identified on the ARC Spillway discharge channel during inspections that exceed the magnitude of erosion features observed in the Primary Spillway, Yuba Water will investigate the nature and causes of the erosion. If the results of that investigation indicate that significant additional erosion seems likely, Yuba Water will implement appropriate

remedial actions to the extent needed to prevent substantial prolonged erosion and ensure Dam and spillway safety.

Defects that may be evaluated for treatment typically will consist of shear zones or bands of intensely weathered rock that are more susceptible to erosion by high flows. Remedial actions may include excavation or other methods to remove weaker rock zones that may erode, backfilling erosional crevices with additional dental concrete treatments to eliminate or reduce the scour channels, or other methods as determined suitable by a qualified engineering geologist or engineer. If remedial treatment with dental concrete is determined to be required, a monitoring plan and appropriate measures will be developed and implemented to protect water quality consistent with the requirements of the Water Quality Control Plan for the California Regional Water Quality Control Board, Central Valley Region, Sacramento River Basin, and the San Joaquin River Basin.

Timing: After construction.

Responsibility: Yuba Water.

ARC Spillway Mitigation Measure HWQ-5: Conduct Turbidity Monitoring in the North Yuba River after Using the ARC Spillway

Monitor turbidity in the North Yuba River prior to, during, and after the first three uses of the ARC Spillway.

Timing: After construction.

Responsibility: Yuba Water.

As explained in the ARC Spillway EIR, ARC Spillway Mitigation Measures HWQ-2, HWQ-4, HWQ-5 would mitigate the potentially significant water quality impacts from ARC Spillway operations to a less-than-significant level. Because these impacts would not meaningfully change under the YRDP Relicensing Project from what was disclosed in the ARC Spillway EIR, the above mitigation measures will ensure that the water quality impacts from ARC Spillway operations will be mitigated to a less-than-significant level under the YRDP Relicensing Project. As explained in Chapter 2, these previously adopted mitigation measures for ARC Spillway operations have been incorporated into the YRDP Relicensing Project and will continue to apply to ARC Spillway operations under the YRDP Relicensing Project.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the North Yuba River below New Bullards Bar Dam. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the North Yuba River. Therefore, impacts on the North Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-8: Impacts on Oregon Creek Water Quality from Operation of the YRDP. The analysis below addresses impacts to Oregon Creek downstream of the Log Cabin Diversion Dam to the Middle Yuba River from operating the YRDP Relicensing Project. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns in this reach of Oregon Creek. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Water quality in Oregon Creek downstream of the Log Cabin Diversion Dam is primarily dictated by the quality of creek water flowing into the impoundment formed by the dam. The slowing of the creek water caused by the dam results in settling of solids, but that would be unchanged by operation of the YRDP Relicensing Project. Therefore, for most water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon), the creek water released through the dam would be unchanged relative to the Existing Condition. Water quality also is affected by creek flow rates, which are affected by dam release rates. Creek flow rate affects water temperature, reaeration processes that affect dissolved oxygen levels, and sediment suspension and transport. Oregon Creek is on the SWRCB's CWA Section 303(d) list as impaired for copper and iron based on concentrations exceeding criteria for the protection of freshwater aquatic life (refer to Table 8.2-2 in Section 8.2), therefore, impacts from operation of the YRDP Relicensing Project on copper and iron are specifically addressed below.

Changes in River Flow Rates

Modeled monthly average Oregon Creek flow rates below the dam are higher in January through July over the entire simulation period with operation of the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Flow-6). The modeled increases are greatest in April, May, and June. In these months, modeled flow rates average 9–24 cfs for the Existing Condition and 21–58 cfs for the YRDP Relicensing Project. Modeled monthly average flow rates are similar to the Existing Condition for July–March and range from 3–68 cfs for the Existing Condition and 3–71 cfs for the YRDP Relicensing Project.

Temperature and Dissolved Oxygen

The changes in the Oregon Creek flow downstream of Log Cabin Diversion Dam would alter the temperature regime in this reach. Modeled monthly average temperatures below the dam range from about 40–69°F for the Existing Condition and about 40–67°F for the YRDP Relicensing Project for the full simulation period (refer to Appendix 4C, Table C1-Temp-8). Modeled monthly average temperatures for the YRDP Relicensing Project are about 1–2°F lower in June through September compared to the Existing Condition.

Temperature reductions in Oregon Creek at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 1°F lower with operation of the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Temp-9). Modeled monthly average temperatures at the confluence range from about 40–70°F for the Existing Condition and 40–69°F for the full simulation period.

The turbulence and interaction of creek water with the atmosphere that reaerates the creek and maintains dissolved oxygen saturation levels would continue to occur with operation of the YRDP Relicensing Project. Given this and the small temperature differences, the dissolved oxygen conditions in Oregon Creek with operation of the YRDP Relicensing Project would not differ substantially, if at all, from the Existing Condition.

Turbidity and TSS

The higher creek flow rates compared to the Existing Condition would primarily occur in the summer months, when flow rates are relatively low (i.e., less than 10 cfs). Higher summer flow rates could result in higher turbidity or TSS, depending on the presence of fine sediment in the channel. However, summer flow rates are comparatively lower than winter flow rates that can reach greater than 1,000 cfs, when most of the sediment transport takes place. Therefore, increases in summer flow rates with operation of the YRDP Relicensing Project are not anticipated to result in substantial, if any, increases in creek turbidity or TSS compared to the Existing Condition.

Copper

As detailed in YRDP Impact WQ-PP-3, the CWA Section 303(d)-listing of Oregon Creek for copper impairment is based on data from 2002–2004 showing concentrations greater than the default CTR criterion for the chronic protection of aquatic life. Also, as described in YRDP Impact WQ-PP-3, there are data from 2009 and 2012 showing copper concentrations well below the CTR criterion. Furthermore, there are many factors that bioavailability, hence toxicity, of copper. Therefore, the degree to which Oregon Creek actually has a copper-related impairment is unclear.

The creek water flowing into the Log Cabin Diversion Dam impoundment is the same water that would be released downstream of the dam, though some suspended solids present in the upstream water may settle out in the impoundment. Operation of the YRDP Relicensing Project would only change the release rates during certain months and water year types. The change in release rates would have little to no effect on downstream creek turbidity and TSS. Therefore, operation of the YRDP Relicensing Project would have little to no effect on copper concentrations or the concentrations of other water quality parameters (e.g., dissolved organic carbon, hardness, and alkalinity) that mitigate the toxicity of copper to aquatic life. As such, operation of the YRDP Relicensing Project would have little to no effect on any copper-related impairments that may be occurring in the creek.

Iron

As detailed in YRDP Impact WQ-PP-3, the CWA Section 303(d)-listing of Oregon Creek for iron impairment is based on data from 2002–2004 showing concentrations greater than the EPA's criterion for the chronic protection of aquatic life. Also, as described in YRDP Impact WQ-PP-3, the EPA's iron criterion does not reflect current science and there are many factors that bioavailability, hence toxicity, of iron. Therefore, the degree to which Oregon Creek actually has an iron-related impairment is unclear.

As stated above, the creek water flowing into the Log Cabin Diversion Dam impoundment is the same water that would be released downstream of the dam, and operation of the YRDP Relicensing Project would have little to no effect on creek turbidity and TSS. Therefore, operation of the YRDP Relicensing Project would have little to no effect on total iron concentrations or the concentrations

or other water quality parameters that iron forms bonds with. As such, operation of the YRDP Relicensing Project would have little to no effect on any iron-related impairments that may be occurring in the creek.

Therefore, operation of the YRDP Relicensing Project would not cause exceedance of an Oregon Creek water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the creek. Furthermore, operation of the YRDP Relicensing Project would not cause measurable degradation for the CWA Section 303(d)-listed constituents in the creek.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Oregon Creek. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Oregon Creek. Therefore, impacts on Oregon Creek water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-9: Impacts on the Middle Yuba River Water Quality from Operation of the YRDP.

The analysis below addresses impacts on Middle Yuba River water quality downstream of Our House Diversion Dam to the confluence with the North Yuba River. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns in this reach of the Middle Yuba River. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Water quality in the Middle Yuba River downstream of the Our House Diversion Dam is primarily dictated by the quality of river water flowing into the impoundment formed by the dam. The slowing of the river water caused by the dam results in settling of solids, but that would be unchanged by operation of the YRDP Relicensing Project. Therefore, for most water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon), the river water released through the dam would be unchanged relative to the Existing Condition. Water quality also is affected by river flow rates, which are affected by dam release rates. River flow rate affects water temperature, reaeration processes that affect dissolved oxygen levels, and sediment suspension and transport. The Middle Yuba River is not on the SWRCB's CWA Section 303(d) list as an impaired waterbody (refer to Table 8.2-2 in Section 8.2) and water quality conditions are generally good and meet water quality objectives (Yuba Water 2013).

Changes in River Flow Rates

Modeled monthly average Middle Yuba River flow rates are higher year-round over the entire simulation period with operation of the YRDP Relicensing Project compared to the Existing

Condition (refer to Appendix 4C, Table C1-Flow-8). The increases are greatest in April, May, and June. In these months, modeled flow rates average 67–115 cfs for the Existing Condition and 195–278 cfs for the YRDP Relicensing Project. Modeled flow rates in July through March average 29–202 cfs for the Existing Condition and 35–267 cfs for the YRDP Relicensing Project, depending on month.

Temperature and Dissolved Oxygen

The changes in the Middle Yuba River downstream of Our House Diversion Dam would alter the temperature regime in this reach. Modeled monthly average temperatures below the dam with the YRDP Relicensing Project are nearly the same as those for the Existing Condition. Modeled monthly average temperatures below the dam range from about 40–71°F for both scenarios for the full simulation period (refer to Appendix 4C, Table C1-Temp-10). Because of the higher flow rates, temperatures would be lower further downstream of the dam. Downstream of the confluence with Oregon Creek, modeled monthly average temperatures are up to 1°F lower compared to the Existing Condition (Appendix 4C, Table C1-Temp-11). Upstream of the confluence with the North Yuba River modeled monthly average temperatures are up to 1.5°F lower compared to the Existing Condition (Appendix 4C, Table C1-Temp-12).

The turbulence and interaction of river water with the atmosphere that reaerates the river and maintains dissolved oxygen saturation levels would continue to occur with operation of the YRDP Relicensing Project. Given this and that the small temperature differences, the dissolved oxygen conditions and saturation levels in Middle Yuba River with operation of the YRDP Relicensing Project would not differ substantially, if at all, from the Existing Condition.

Turbidity and TSS

The higher river flow rates compared to the Existing Condition would primarily occur in the spring months when flow rates can already be high (i.e. >5,000 cfs). Higher flows would also occur in the summer months, when flow rates are much lower (i.e., <200 cfs). Higher flow rates could result in higher turbidity or TSS, depending on the presence of fine sediment in the channel. However, flow rates with the YRDP Relicensing Project would be within the range that occurs under the Existing Condition. Therefore, increases in summer flow rates with operation of the YRDP Relicensing Project are not anticipated to result in substantial, if any, increases in river turbidity or TSS compared to the Existing Condition.

As such, operation of the YRDP Relicensing Project would not cause exceedance of a Middle Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the Middle Yuba River. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site

or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Middle Yuba River. Therefore, impacts on the Middle Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-10: Impacts on Upper Yuba River Water Quality from Operation of the YRDP.

The analysis below addresses impacts of operating the YRDP Relicensing Project on water quality of the upper Yuba River, which is the reach of the Yuba River from the confluence of the North Yuba River and Middle Yuba River to Englebright Reservoir. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns in this reach of the Yuba River. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Water quality in the upper Yuba River is primarily dictated by the quality of water flowing in from the North Yuba River and Middle Yuba River. As described in YRDP Impacts WQ-PP-8 and WQ-PP-9, water quality of the North Yuba River and Middle Yuba River would not differ substantially, if at all, from the Existing Condition. Therefore, upper Yuba River water quality at the confluence also would not differ substantially, if at, from the Existing Condition.

Water quality also is affected by tributary river flow rates. River flow rate affects water temperature, reaeration processes that affect dissolved oxygen levels, and sediment suspension and transport. The upper Yuba River is on the SWRCB's CWA Section 303(d) list as an impaired for mercury and chromium (refer to Table 8.2-2 in Section 8.2), therefore, impacts from operation of the YRDP Relicensing Project on mercury and chromium are specifically addressed below.

Changes in River Flow Rates

Modeled monthly average upper Yuba River flow rates are higher year-round over the entire simulation period with operation of the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C1-Flow-11). Modeled flow rates below the Middle Yuba River confluence average 44–1,077 cfs for the Existing Condition and 71–1,115 cfs for the YRDP Relicensing Project, depending on month.

Temperature and Dissolved Oxygen

The changes in the upper Yuba River flow rates would alter its temperature regime. Modeled monthly average temperatures below the confluence range from about 40–73°F for the Existing Condition and 40–66°F for the YRDP Relicensing Project for the full simulation period (refer to Appendix 4C, Table C1-Temp-13). Modeled monthly average temperatures for the YRDP Relicensing Project are about 6–9°F lower in the summer compared to the Existing Condition.

Temperature differences in the upper Yuba River at Colgate Powerhouse are smaller. Modeled monthly average temperatures at this location range from about 39–73°F for the Existing Condition and 39–71°F for the YRDP Relicensing Project for the full simulation period (refer to Appendix 4C, Table C1-Temp-14). Modeled monthly average temperatures for the YRDP Relicensing Project are about 1–3°F lower in the summer compared to the Existing Condition.

The turbulence and interaction of river water with the atmosphere that reaerates the river and maintains dissolved oxygen saturation levels would continue to occur with operation of the YRDP Relicensing Project. Given this, and that project operations would result in cooler water temperatures, the dissolved oxygen conditions and saturation levels in upper Yuba River with operation of the YRDP Relicensing Project would not differ substantially from, and may be higher than, the Existing Condition.

Turbidity and TSS

The higher river flow rates compared to the Existing Condition would primarily occur in the spring months when flow rates can already be high (i.e. >5,000 cfs). Higher flows would also occur in the summer months, when flow rates above Colgate Powerhouse are much lower (i.e., <200 cfs). Higher flow rates could result in higher turbidity or TSS, depending on the presence of fine sediment in the channel. However, flow rates with the YRDP Relicensing Project would be within the range that occurs under the Existing Condition. Therefore, increases in summer flow rates with operation of the YRDP Relicensing Project are not anticipated to result in substantial, if any, increases in river turbidity or TSS compared to the Existing Condition.

Mercury

The factors that affect mercury methylation are described in YRDP Impact WQ-PP-3. As just described, operation of the YRDP Relicensing Project is not expected to result in substantial, if any, differences in dissolved oxygen or TSS levels, or other water quality constituents (e.g., salinity-related parameters, nutrients, trace metals, organic carbon). Furthermore, the high flows that result in sediment transport in the winter months would continue similar to the Existing Condition. Therefore, the factors that affect mercury methylation would not change substantially, if at all, relative to the Existing Condition. Finally, as described further in YRDP Impact WQ-PP-5, one of the proposed conditions of the CWA Section 401 WQC is Condition 19, Mercury Management (Appendix 2E) to ensure beneficial uses would be protected from increases in methylmercury from project operations. Therefore, operation of the YRDP Relicensing Project would have little to no effect on mercury-related impairments in the upper Yuba River.

Chromium

As detailed in YRDP Impact WQ-PP-3, the CWA Section 303(d)-listing of the upper Yuba River for chromium impairment is based on data from 2002–2004 showing concentrations greater than the drinking water MCL. The average of these data, collected in a one-month period, is less than the drinking water MCL. Furthermore, there are data from 2009 and 2012 showing chromium concentrations well below the drinking water MCL. Therefore, the degree to which the upper Yuba River has a chromium-related impairment is unclear. Regardless, chromium concentrations in the water flowing into the upper Yuba River from the North Yuba River and Middle Yuba River would differ little, if at all, from the Existing Condition. Similarly, river turbidity and TSS is expected to be similar to the Existing Condition. As such, operation of the YRDP Relicensing Project would have little to no effect on any chromium-related impairments that may be occurring in the river.

Therefore, operation of the YRDP Relicensing Project would not cause exceedance of an upper Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

Furthermore, operation of the YRDP Relicensing Project would not cause measurable degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the upper Yuba River. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the upper Yuba River. Therefore, impacts on the upper Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-11: Impacts on Lower Yuba River Water Quality from Operation of the YRDP.

The analysis below addresses impacts of operating the YRDP Relicensing Project on water quality of the lower Yuba River, which is the reach of the Yuba River downstream of Englebright Dam to the Feather River. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns in this reach of the Yuba River. Alteration of existing drainage patterns could occur through YRDP facility modification or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Water quality in the lower Yuba River is primarily dictated by the quality of water released from Englebright Reservoir. Water quality also is affected by river flow rates, which are affected by dam release rates. River flow rate affects water temperature, reaeration processes that affect dissolved oxygen levels, and sediment suspension and transport.

As discussed in YRDP Impact WQ-PP-6, operation of the YRDP Relicensing Project would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) in Englebright Reservoir compared to the Existing Condition. Furthermore, operations would not affect the level that water is released from the reservoir. Therefore, the quality of water released into the lower Yuba River would be similar to, and likely nearly the same as, the water quality under the Existing Condition.

Modeled monthly average lower Yuba River flow rates with operation of the YRDP Relicensing Project are similar over the entire simulation period and across all water year types compared to the Existing Condition with differences being less than 5 percent (refer to Appendix 4C, Tables C1-Flow-1 through C1-Flow-4). Given that there would be little change in river flow rate, operation of the YRDP Relicensing Project would not contribute to higher turbidity or TSS levels, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon).

River temperatures with operation of the YRDP Relicensing Project are also similar over the entire simulation period and across all water year types compared to the Existing Condition, with differences in modeled monthly average temperatures being less than 0.5°F (refer to Appendix 4C, Tables C1-Temp-1 through C1-Temp-5).

The turbulence and interaction of river water with the atmosphere that reaerates the river and maintains dissolved oxygen saturation levels would continue to occur with operation of the YRDP Relicensing Project. Given this and that project operations would result in little to no change water temperatures, the dissolved oxygen conditions and saturation levels in lower Yuba River with operation of the YRDP Relicensing Project would not differ substantially from the Existing Condition.

The lower Yuba River is on the SWRCB's CWA Section 303(d) list of impaired waterbodies for impairments associated with mercury and copper (refer to Table 8.2-2 in Section 8.2.2). As just described, operation of the YRDP Relicensing Project is not expected to result in substantial, if any, changes in the river water quality at Englebright Dam or change in flows that would result in changes in water quality constituents, including TSS, mercury, or copper. Therefore, operation of the YRDP Relicensing Project would not result in a long-term measurable increase in mercury or copper in the lower Yuba River.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Therefore, impacts on the lower Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of the YRDP.

The analysis below addresses impacts of operating the YRDP Relicensing Project on water quality of the lower Feather River, Sacramento River, and Delta. Operation of the YRDP Relicensing Project does not involve alteration of existing drainage patterns of or around these waterbodies.

As discussed in Chapter 4, Section 4.3.1.3, "Downstream Extent of the Project Area," operation of the YRDP Relicensing Project would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River. A sensitivity analysis conducted to compare Feather River flow rates downstream of the lower Yuba River under the Existing Condition and the YRDP Relicensing Project found that the average difference in monthly average flow rate would be 0.11 percent. Consequently, operation of the YRDP Relicensing Project would not result in detectable changes in Feather River flow rates immediately downstream of the Yuba River compared to the Existing Condition, and changes in water quality conditions downstream of the mouth of the Yuba River would not be measurable.

Therefore, operation of the YRDP Relicensing Project would cause little, if any, differences in lower Feather River water quality constituents (e.g., dissolved oxygen, salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Existing Condition. As such, Sacramento River and Delta water quality also would not be measurably affected by operation of the YRDP Relicensing Project. Therefore, operation of the YRDP Relicensing Project would not cause Feather River, Sacramento River, and Delta water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of the YRDP Relicensing Project would not result in long-term measurable increases in constituent impairments in these waterbodies.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Feather River, Sacramento River, or Delta. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Therefore, impacts on Feather River, Sacramento River, and Delta water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-13: Impacts on Surface Water Quality from Other Operation and Maintenance of the YRDP.

The YRDP Relicensing Project may result in minor changes in the timing, frequency, or location of routine O&M practices. However, any changes to routine O&M activities would remain within the range of current annual practices. Routine O&M of the YRDP does not involve alteration of existing drainage patterns. Alteration of existing drainage patterns could occur through YRDP facility modification, improvement, or restoration activities, which are addressed in YRDP Impacts WQ-PP-1, WQ-PP-2, WQ-PP-3, and WQ-PP-4.

Yuba Water would continue to implement SPCC plans for New Colgate Powerhouse, New Colgate Penstock Shutoff Valve, and New Bullards Bar Dam. Furthermore, the YRDP Relicensing Project includes the following conditions pertaining to protection of water quality when ground-disturbance activities are occurring.

- Yuba Water Proposed WQC Condition 16, Hazardous Materials, requires implementation of the Hazardous Materials Management Plan listed in Table 8.5-2.
- Yuba Water Proposed WQC Condition 18, Construction and Maintenance, requires implementation of the Erosion and Sediment Control Plan listed in Table 8.5-2, and preparation and implementation of WQMP Plans, as discussed in YRDP Impact WQ-PP-1.

With implementation of the measures and BMPs included in the YRDP implementation plans, and compliance with the conditions in the SWRCB-issued CWA Section 401 WQC for the project, pollutant discharges to surface waters would be minimized and controlled such that YRDP

Relicensing Project O&M activities would not cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies.

Routine O&M activities would potentially overlap in time with each other, with YRDP facility construction activities addressed in YRDP Impact WQ-P-1, the *Recreation Facilities Plan* activities addressed in YRDP Impact WQ-PP-2, and other implementation plan activities addressed in YRDP Impact WQ-PP-4. Furthermore, the routine O&M activities, YRDP facility construction activities, and implementation plan activities would overlap in time with YRDP Relicensing Project operations and associated effects on water quality described in YRDP Impacts WQ-PP-5 through WQ-PP-12. As described in these impact discussions, YRDP operations would cause little, if any, differences in water quality of Project Area waterbodies. Therefore, while these activities would overlap in time, the potential effects to water quality described above would not combine with these other project components to result in conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies due to the relatively short duration and geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

CEQA Conclusion

Based on the above analysis, routine O&M associated with the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of Project Area waterbodies. Furthermore, YRDP Relicensing Project routine O&M would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies. Therefore, the YRDP Relicensing Project operations- and maintenance-related impacts on surface water quality of Project Area waterbodies would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-PP-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.

The YRDP Relicensing Project consists of water storage and diversion facilities located within and adjacent to Project Area reservoirs and rivers where water levels fluctuate. In addition, some recreational facilities are located adjacent to Project Area reservoirs and rivers.

Modeling results show small (2 percent or less) differences in average New Bullards Bar Reservoir and Englebright Reservoir end-of-month storage and water surface elevations compared to the Existing Condition (refer to Appendix 4C, Tables C1-Reservoir-1 through C1-Reservoir-4). Modeling results also show that peak flow rates of Project Area rivers and creeks with the YRDP Relicensing Project would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4C, Figures C1-Flow-1 through C1-Flow-48). Therefore, project facilities within the YRDP Relicensing Project would not be at increased risk of inundation that

would result in an increased risk of release of pollutants to Project Area waterbodies compared to the Existing Condition.

Furthermore, YRDP Relicensing Project operations would not result in an increased risk of release of pollutants downstream of project facilities. Modeling results show that peak lower Yuba River flow rates with operation of the YRDP Relicensing Project are similar to the Existing Condition over the entire simulation period (refer to Appendix 4C, Figures C1-Flow-1 through C1-Flow-12).

Finally, as discussed in Chapter 4, Section 4.3.1.3, "Downstream Extent of the Project Area," operation of the YRDP Relicensing Project would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River. Consequently, the YRDP Relicensing Project would not result in an increased risk of release of pollutants downstream of the lower Yuba River.

CEQA Conclusion

Based on the above discussion, the YRDP Relicensing Project would have a **less-than-significant impact** on the risk of release of pollutants due to project inundation in flood hazard zones.

YRDP Impact WQ-PP-15: Consistency with Water Quality Control Plans.
The relevant water quality control plan for the Project Area is the "Water Quality Control Plan for the Sacramento and the San Joaquin River Basins" (Basin Plan) (CVRWQCB 2019). The Basin Plan defines beneficial uses, water quality objectives to protect beneficial uses, a program of implementation for achieving water quality objectives, and a surveillance and monitoring program.

Project construction and operation would be subject to meeting applicable water quality objectives in the CVRWQCB's Basin Plan, *as* implemented through various permits, where applicable, including the SWRCB's "NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities" (Construction Stormwater General Permit; Order No. 2022-0057-DWQ/NPDES Permit No. CAS000002) for construction activities that disturb one or more acre and the CWA Section 401 WQC issued for the Proposed Projects. Therefore, *construction, operation, and maintenance of* the *YRDP Relicensing Project* would not conflict with or obstruct the implementation of a water quality control plan,

CEQA Conclusion

Based on the above discussion, the construction and O&M of the YRDP Relicensing Project would have **no impact** on the implementation of a water quality control plan (i.e., Basin Plan), nor would the project conflict with a water quality control plan (i.e., Basin Plan).

Narrows Impact WQ-PP-1: Impacts on Surface Water Quality from Operation of the Narrows Project.
The analysis of potential operations-related impacts to surface water quality for the Narrows Relicensing Project is focused on Project Area waterbodies downstream of Englebright Dam, including the lower Yuba River, Feather River, Sacramento River, and Delta, because the Narrows Project does not involve any operations affecting areas upstream of Englebright Dam.

Yuba Water proposes to continue to operate the Narrows Relicensing Project in substantial conformance with existing operations, with minor modifications. The minor operations-related

modifications that could affect water quality include operating the project to assist the YRDP with meeting instream flow requirements in the lower Yuba River at Smartsville and maintaining a minimum water surface elevation in Englebright Reservoir. However, the effects of these operations on Englebright Reservoir and lower Yuba River compared to the Existing Condition would not be beyond those described for YRDP Impact WQ-PP-6 and YRDP Impact WQ-PP-11, respectively.

Any minimal effects of the Narrows Relicensing Project operations on lower Yuba River water quality would have little to no effect on the water quality of the Feather River, Sacramento River, and Delta, given modeling results that show hydrologic operations on the Yuba River have little effect on downstream hydrology, as discussed in YRDP Impact WQ-PP-12. Given that the comparative effect of the Narrows Relicensing Project on lower Yuba River flows would be much smaller, the Narrows Relicensing Project would not result in detectable changes in Feather River water quality or the water quality of the Sacramento River or Delta.

CEQA Conclusion

Based on the above analysis, operation of the Narrows Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River, lower Feather River, Sacramento River, or Delta. Furthermore, operation of the Narrows Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Finally, the project would not result in an increased risk of release of pollutants to Project Area waterbodies or conflict with or obstruct implementation of a water quality control plan. Therefore, impacts on Yuba River, Feather River, Sacramento River, and Delta water quality from operation of the Narrows Relicensing Project would be **less than significant**. No CEQA mitigation is required.

8.5.2 Proposed Projects Compared to the Future Baseline

The impact analyses below depend, in part, on differences in reservoir storage and river/creek flow rates with the Proposed Projects (future) compared to the Future Baseline. Impacts not dependent on changes in reservoir storage and river/creek flow rates are addressed in Section 8.5.1 relative to the Existing Condition and are not repeated here.

YRDP Impact WQ-FPP-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of the YRDP.

Modeled differences in New Bullards Bar Reservoir average end-of-month storage with operation of the YRDP Relicensing Project (future) compared to the Future Baseline are similar to those described in YRDP Impact WQ-PP-5 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C2-Reservoir-1). Modeled average end-of-month storage with the YRDP Relicensing Project (future) for the full simulation period is 1 percent lower in all months except March and April when there is 0 percent difference. Modeled average end-of-month storage with the YRDP Relicensing Project (future) also differed little by water year type, with the difference being 0 percent in critical years, 0–1 percent in dry years, 0–1 percent in below normal

years, 0–1 percent in above normal years, and 0–2 percent in wet years compared to the Future Baseline.

Modeled differences in average water surface elevation with the YRDP Relicensing Project (future) compared to the Future Baseline are also similar to those described for the YRDP Relicensing Project compared to the Existing Condition (Appendix 4C, Table C2-Reservoir-2). Modeled average end-of-month water surface elevation with the YRDP Relicensing Project (future) for the full simulation period is 0–2 feet lower, depending on month, compared to the Future Baseline, with the average difference ranging from 0–3 feet, depending on month and water year type.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-5, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in New Bullards Bar Reservoir temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause exceedance of a reservoir water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the reservoir. Furthermore, operation of the YRDP Relicensing Project (future) would not cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in New Bullards Bar Reservoir. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to New Bullards Bar Reservoir. Therefore, impacts on New Bullards Bar Reservoir water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-6: Impacts on Englebright Reservoir Water Quality from Operation of the YRDP.

Modeled differences in Englebright Reservoir average end-of-month storage with operation of the YRDP Relicensing Project (future) compared to the Future Baseline are similar to those described in YRDP Impact WQ-PP-6 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C2-Reservoir-3). The difference between average end-of-month storage with the YRDP Relicensing Project (future) for the full simulation period and the Future Baseline is 0 percent. Average end-of-month storage is about 44,000–46,000 ac-ft, depending on month, and differences in end-of-month storage average less than 100 ac-ft.

Modeled differences in average water surface elevation with the YRDP Relicensing Project (future) compared to the Future Baseline are also similar to those described for the YRDP

Relicensing Project compared to the Existing Condition (Appendix 4C, Table C2-Reservoir-4). The difference in average end-of-month water surface elevation with the YRDP Relicensing Project (future) for the full simulation period compared to the Future Baseline is less than 1 foot. Average end-of-month water surface elevation with the YRDP Relicensing Project (future) also differed little by water year type, with the difference being 1 foot or less depending on month and water year type.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-6, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in Englebright Reservoir temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause exceedance of a reservoir water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the reservoir. Furthermore, operation of the YRDP Relicensing Project (future) would not cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Englebright Reservoir. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Englebright Reservoir. Therefore, impacts on Englebright Reservoir water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of the YRDP.

Modeled North Yuba River flow rates with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline are similar to those described in YRDP Impact WQ-PP-7 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C2-Flow-5). Modeled monthly average North Yuba River flow rates are higher with operation of the YRDP Relicensing Project (future) during July through November over the entire simulation period and across all water year types compared to the Future Baseline. In July through November, modeled monthly average flow rates below New Bullards Bar Dam range from 8–9 cfs for the Future Baseline and 14–43 cfs for the YRDP Relicensing Project (future) for the full simulation period. The average flow increase in these months ranges from 6–34 cfs. In December through June, modeled monthly average flow rates are lower with operation of the YRDP Relicensing Project (future). In these months, the average flow rate ranges from 169–663 cfs for the Future Baseline and 121–650 cfs for the YRDP Relicensing Project (future).

The modeled river temperatures with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the dam range from about 45–53°F for the Future Baseline and about 45–51°F for the YRDP Relicensing Project (future) for the full simulation period (refer to Appendix C, Table C2-Temp-6). Modeled monthly average temperatures are about 4–6°F lower in June through September compared to the Future Baseline. In December, January, April, and May, modeled monthly average temperatures differ from the Future Baseline by 0.0–0.1°F.

Temperature reductions in the North Yuba River at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 9–14°F lower with operation of the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C2-Temp-7). Modeled monthly average temperatures at the confluence range from about 45–68°F for the Future Baseline and 45–61°F for the YRDP Relicensing Project (future) for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-7, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in the North Yuba River dissolved oxygen, turbidity, TSS, methylmercury, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause exceedance of a North Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of the YRDP Relicensing Project (future) would result in a long-term measurable increase in mercury that would cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the North Yuba River below New Bullards Bar Dam. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the North Yuba River. Therefore, impacts on the North Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-8: Impacts on Oregon Creek Water Quality from Operation of the YRDP. Modeled Oregon Creek flow rates with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline are the same or nearly the same as those described in YRDP Impact WQ-PP-8 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C2-Flow-6). The modeled increases are greatest in April, May, and June. In these months, modeled flow rates average 9–24 cfs for the Future Baseline and 21–58 cfs for the YRDP Relicensing Project (future). Modeled monthly average flow rates are similar to the Future

Baseline for July–March and range from 3–68 cfs for the Future Baseline and 3–71 cfs for the YRDP Relicensing Project (future).

The modeled creek temperatures with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline also are the same or nearly the same as those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the Log Cabin Diversion Dam range from about 40–69°F for the Future Baseline and about 40–67°F for the YRDP Relicensing Project (future) for the full simulation period (refer to Appendix 4C, Table C2-Temp-8). Modeled monthly average temperatures for the YRDP Relicensing Project are about 1–2°F lower in June through September compared to the Future Baseline. Temperature reductions at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 1°F lower with operation of the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C2-Temp-9). Modeled monthly average temperatures at the confluence range from about 40–70°F for the Future Baseline and 40–69°F for the YRDP Relicensing Project (future) for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-8, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in Oregon Creek dissolved oxygen, turbidity, TSS, copper, iron, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause exceedance of an Oregon Creek water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the creek. Furthermore, operation of the YRDP Relicensing Project (future) would not cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the creek.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Oregon Creek. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Oregon Creek. Therefore, impacts on Oregon Creek water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-9: Impacts on the Middle Yuba River Water Quality from Operation of the YRDP.

Modeled Middle Yuba River flow rates with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline are similar to those described in YRDP Impact WQ-PP-9 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C2-Flow-8). Modeled monthly average Middle Yuba River flow rates are higher year-round over the entire simulation period with operation of the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C2-Flow-8). The increases are

greatest in April, May, and June. In these months, modeled flow rates average 64–114 cfs for the Future Baseline and 197–280 cfs for the YRDP Relicensing Project (future). Modeled flow rates in July through March average 31–201 cfs for the Future Baseline and 44–273 cfs for the YRDP Relicensing Project (future), depending on month.

The modeled river temperatures with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below Our House Diversion Dam with the YRDP Relicensing Project (future) are nearly the same as those for the Future Baseline. Modeled monthly average temperatures below the dam range from about 40–71°F for both scenarios for the full simulation period (refer to Appendix 4C, Table C2-Temp-10). Because of the higher flow rates, temperatures would be lower further downstream of the dam. Downstream of the confluence with Oregon Creek, modeled monthly average temperatures are up to 1°F lower compared to the Future Baseline (Appendix 4C, Table C2-Temp-11). Upstream of the confluence with the North Yuba River average temperatures are up to 1.6°F lower compared to the Future Baseline (Appendix 4C, Table C2-Temp-12).

Therefore, for the same reasons provided in YRDP Impact WQ-PP-9, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in Middle Yuba River dissolved oxygen, turbidity, TSS, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause exceedance of a Middle Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the Middle Yuba River. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Middle Yuba River. Therefore, impacts on the Middle Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-10: Impacts on Upper Yuba River Water Quality from Operation of the YRDP.

Modeled upper Yuba River flow rates with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline are similar to those described in YRDP Impact WQ-PP-10 for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average upper Yuba River flow rates are higher year-round over the entire simulation period with operation of the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C2-Flow-11). Modeled flow rates below the Middle Yuba River confluence

average 46–1,084 cfs for the Future Baseline and 78–1,125 cfs for the YRDP Relicensing Project (future), depending on month.

The modeled river temperatures with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the confluence range from about 40–73°F for the Future Baseline and 40–66°F for the YRDP Relicensing Project (future) for the full simulation period (refer to Appendix 4C, Table C2-Temp-13). Modeled monthly average temperatures for the YRDP Relicensing Project (future) are about 5–8°F lower in the summer compared to the Future Baseline. Temperature differences in the upper Yuba River at Colgate Powerhouse are smaller. Modeled monthly average temperatures at this location range from about 39–73°F for the Future Baseline and 39–71°F for the YRDP Relicensing Project (future) for the full simulation period (refer to Appendix 4C, Table C2-Temp-14). Modeled monthly average temperatures for the YRDP Relicensing Project (future) are about 1–3°F lower in the summer compared to the Future Baseline.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-10, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in upper Yuba River dissolved oxygen, turbidity, TSS, mercury, chromium, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause exceedance of an upper Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of the YRDP Relicensing Project (future) would not cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the upper Yuba River. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the upper Yuba River. Therefore, impacts on the upper Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-11: Impacts on Lower Yuba River Water Quality from Operation of the YRDP.

Modeled lower Yuba River flow rates with operation of the YRDP Relicensing Project (future) and differences from the Future Baseline are similar to those described in YRDP Impact WQ-PP-11 for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average lower Yuba River flow rates with operation of the YRDP Relicensing Project (future) are similar over the entire simulation period and across all water year types compared to the Future

Baseline with differences being less than 5 percent (refer to Appendix 4C, Tables C2-Flow-1 through C2-Flow-4).

River temperatures with operation of the YRDP Relicensing Project (future) are also similar over the entire simulation period and across all water year types compared to the Future Baseline, with differences in modeled monthly average temperatures being less than 0.5°F (refer to Appendix 4C, Tables C2-Temp-1 through C2-Temp-5).

Therefore, for the same reasons provided in YRDP Impact WQ-PP-11, operation of the YRDP Relicensing Project (future) would not cause substantial, if any, differences in lower Yuba River dissolved oxygen, turbidity, TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause lower Yuba River water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of the YRDP Relicensing Project (future) would not result in a long-term measurable increase in mercury or copper in the lower Yuba River.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Therefore, impacts on the lower Yuba River water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of the YRDP.

As discussed in YRDP Impact WQ-PP-12, the operation of the YRDP Relicensing Project would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River based on a sensitivity analysis comparing Feather River flow rates downstream of the lower Yuba River under the Existing Condition and with the YRDP Relicensing Project. For the same reasons, operation of the YRDP Relicensing Project would not result in detectable changes in Feather River flows immediately downstream of the Yuba River compared to the Future Baseline, and changes in water quality conditions downstream of the mouth of the Yuba River would not be measurable.

Therefore, operation of the YRDP Relicensing Project (future) would cause little, if any, differences in lower Feather River water quality constituents (e.g., dissolved oxygen, salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Existing Condition. As such, Sacramento River and Delta water quality also would not be measurably affected by operation of the YRDP Relicensing Project (future). Therefore, operation

of the YRDP Relicensing Project (future) would not cause Feather River, Sacramento River, and Delta water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of the YRDP Relicensing Project (future) would not result in long-term measurable increases in constituent impairments in these waterbodies.

CEQA Conclusion

Based on the above analysis, operation of the YRDP Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Feather River, Sacramento River, or Delta. Furthermore, operation of the YRDP Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Therefore, impacts on Feather River, Sacramento River, and Delta water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FPP-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.

The YRDP Relicensing Project consists of water storage and diversion facilities located within and adjacent to Project Area reservoirs and rivers where water levels fluctuate. In addition, some recreational facilities are located adjacent to Project Area reservoirs and rivers.

Modeling results show small (2 percent or less) differences in average New Bullards Bar Reservoir and Englebright Reservoir end-of-month storage and water surface elevations compared to the Future Baseline (refer to Appendix 4C, Tables C2-Reservoir-1 through C2-Reservoir-4). Modeling results also show that peak flow rates of Project Area rivers and creeks with the YRDP Relicensing Project would be the same or very similar to those that occur under the Future Baseline (refer to Appendix 4C, Figures C2-Flow-1 through C2-Flow-48). Therefore, project facilities with the YRDP Relicensing Project would not be at increased risk of inundation that would result in an increased risk of release of pollutants to Project Area waterbodies compared to the Future Baseline.

Furthermore, YRDP Relicensing Project operations would not result in an increased risk of release of pollutants downstream of project facilities. Modeling results show that peak lower Yuba River flow rates with operation of the YRDP Relicensing Project are similar to the Future Baseline over the entire simulation period (refer to Appendix 4C, Figures C2-Flow-1 through C2-Flow-12).

Finally, as discussed in Chapter 4, Section 4.3.1.3, "Downstream Extent of the Project Area," operation of the YRDP Relicensing Project would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River. Consequently, the YRDP Relicensing Project would not result in an increased risk of release of pollutants downstream of the lower Yuba River.

CEQA Conclusion

Based on the above discussion, the YRDP Relicensing Project would have a **less-than-significant impact** on the risk of release of pollutants due to project inundation in flood hazard zones.

Narrows Impact WQ-FPP-1: Impacts on Surface Water Quality from Operation of the Narrows Project.

Yuba Water proposes to continue to operate the Narrows Relicensing Project in substantial conformance with existing operations, with minor modifications. The minor operations-related modifications that could affect water quality include operating the project to assist the YRDP with meeting instream flow requirements in the lower Yuba River at Smartsville and maintaining a minimum water surface elevation in Englebright Reservoir. However, the effects of these operations on Englebright Reservoir and lower Yuba River compared to the Future Baseline would not be beyond those described for YRDP Impact WQ-FPP-6 and YRDP Impact WQ-FPP-11, respectively. Any minimal effects of the Narrows Relicensing Project operations on lower Yuba River water quality would have little to no effect on the water quality of the Feather River, Sacramento River, and Delta, given modeling results that show hydrologic operations on the Yuba River have little effect on downstream hydrology, as discussed in YRDP Impact WQ-FPP-12.

CEQA Conclusion

Based on the above analysis, operation of the Narrows Relicensing Project would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River, lower Feather River, Sacramento River, or Delta. Furthermore, operation of the Narrows Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Finally, the project would not result in an increased risk of release of pollutants to Project Area waterbodies or conflict with or obstruct implementation of a water quality control plan. Therefore, impacts on Yuba River, Feather River, Sacramento River, and Delta water quality from operation of the Narrows Relicensing Project would be **less than significant**. No CEQA mitigation is required.

8.5.3 Alternative 1 compared to the Existing Condition

Construction, operations, and maintenance activities for the Proposed Projects under the new FERC licenses have the potential to affect surface water quality of waterbodies in the Project Area. The discussions below address these potential impacts.

Note that operations-related impacts on surface water quality that are dependent on reservoir storage and river/creek flow rate changes do not have CEQA impact conclusions in this section. Discussion for surface water quality impacts that are dependent on reservoir storage and river/creek flow rate changes compared to the Existing Condition is provided for informational purposes only. CEQA impact conclusions for these impacts are based on the comparisons between Alternative 1 and the Future Baseline, presented in Section 8.5.4; refer to Section 8.4.3, "Water Operations-Related Impacts," for additional information regarding the use of the dual baseline for

impact determinations and rationale for CEQA conclusions being based on comparison to the Future Baseline.

The impact analyses below depend, in part, on differences in reservoir storage and river/creek flow rates and temperatures with Alternative 1 compared to the Future Baseline. To avoid repeating information presented for the same impact analyses in Section 8.5.1 for the YRDP Relicensing Project compared to the Existing Condition, the discussion below is focused on how the reservoir storage and river/creek flow rate and temperature differences for Alternative 1 compare to the Existing Condition, and how those differences would affect water quality, based on information presented for the same impacts in Section 8.5.1.

YRDP Impact WQ-Alt1-1: Impacts on Surface Water Quality from Modification of Power Generation- and Water Conveyance-Related Facilities for the YRDP.
Alternative 1 includes the same modifications to power generation- and water conveyance-related facilities as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-1, this impact would be **less than significant**.

YRDP Impact WQ-Alt1-2: Impacts on Surface Water Quality from Implementation of the YRDP Recreation Facilities Plan
Alternative 1 includes the same *Recreation Facilities Plan* as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-2, this impact would be **less than significant**.

YRDP Impact WQ-Alt1-3: Impacts on Surface Water Quality from Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan
Alternative 1 includes the same *Log Cabin and Our House Diversion Dams Sediment Management Plan* as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-3, this impact would be **less than significant**.

YRDP Impact WQ-Alt1-4: Impacts on Surface Water Quality from Other YRDP Implementation Plans
Alternative 1 includes the same YRDP Implementation Plans as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-4, this impact would be **less than significant**.

YRDP Impact WQ-Alt1-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of Alternative 1.
Modeling results show small increases in New Bullards Bar Reservoir average end-of-month storage with Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Reservoir-1). Average end-of-month storage with Alternative 1 for the full simulation period is 1 percent higher in June through March, and 0 percent different in April and May compared to the Existing Condition. The higher average storage is primarily driven by higher storage in dry water years when modeled monthly average storage is up to 2 percent higher and critical water years when modeled monthly average storage is up to 6 percent higher compared to the Existing Condition.

Modeling results also show increases in end-of-month water surface elevation with Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Reservoir-2). Average end-

of-month water surface elevation with Alternative 1 for the full simulation period is 1–2 feet higher compared to the Existing Condition. The greatest increases are in dry and critical years. In dry years, average end-of-month water surface elevation with Alternative 1 is from 3–5 feet higher in May through September, and 0–1 foot higher in other months compared to the Existing Condition. In critical years, average end-of-month water surface elevation with Alternative 1 is from 9–11 feet higher in May through September and 3–7 feet higher in other months compared to the Existing Condition.

Temperature, dissolved oxygen, nutrients, and mercury would be the water quality constituents most affected by changes in reservoir end-of-month storage and water surface elevation. The quality of inflows would be unaffected by the alternative, and therefore would be the same or similar, hence other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) would be negligibly affected by differences in reservoir end-of-month storage and water surface elevation.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-6: Impacts on Englebright Reservoir Water Quality from Operation of Alternative 1.

Modeling results show little to no difference in Englebright Reservoir average end-of-month storage with Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Reservoir-3). Average end-of-month storage with Alternative 1 for the full simulation period is 3 percent higher in September, 2 percent higher in October, and 0 percent different in the other months compared to the Existing Condition.

Modeling results also show little to no difference in end-of-month water surface elevation with Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Reservoir-4). Average end-of-month water surface elevation with Alternative 1 for the full simulation period is 2 feet higher in September, 1 foot higher in October, and no different for the other months compared to the Existing Condition.

Because there would be little to no change in Englebright Reservoir end-of-month storage and water surface elevation, there would be little to no change in reservoir temperature, dissolved oxygen or nutrients. Furthermore, based on the small differences in modeled storage and water surface elevation, operation of Alternative 1 would have little to no effect on the reservoir stratification, residence time, and water depth that could affect water column mercury concentrations.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of Alternative 1

Modeled North Yuba River flow rates with operation of Alternative 1 and differences from the Existing Condition are similar to those described in YRDP Impact WQ-PP-7 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C3-Flow-5). Modeled monthly average North Yuba River flow rates are higher with operation of Alternative 1 during July through November over the entire simulation period and across all water year types compared to the Existing Condition. In July through November, modeled monthly average flow rates below New Bullards Bar Dam range from 8–9 cfs for the Existing Condition and 14–43 cfs for Alternative 1 for the full simulation period. The average flow increase in these months ranges from 6–34 cfs. In December through June, modeled monthly average flow rates are lower with operation of Alternative 1. In these months, the modeled monthly average flow rate ranges from 168–657 cfs for the Existing Condition and 121–648 cfs for Alternative 1.

The modeled river temperatures with operation of Alternative 1 and differences from the Existing Condition also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the dam range from about 45–53°F for the Existing Condition and about 45–51°F for Alternative 1 for the full simulation period (refer to Appendix C, Table C3-Temp-6). Modeled monthly average temperatures are about 4–6°F lower in June through September compared to the Existing Condition. In December, January, April, and May, modeled monthly average temperatures differ from the Existing Condition by 0.0–0.1°F.

Temperature reductions in the North Yuba River at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 9–14°F lower with operation of Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Temp-7). Modeled monthly average temperatures at the confluence range from about 45–68°F for the Existing Condition and 45–61°F for Alternative 1 for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-7, operation of Alternative 1 would not cause substantial, if any, differences in the North Yuba River dissolved oxygen, turbidity, TSS, methylmercury, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 1 would not cause exceedance of a North Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 1 would result in a long-term increase in mercury that would cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-8: Impacts on Oregon Creek Water Quality from Operation of Alternative 1

Modeled Oregon Creek flow rates with operation of Alternative 1 differences from the Existing Condition are the same or nearly the same as those described in YRDP Impact WQ-PP-8 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C3-Flow-6). The modeled increases are greatest in April, May, and June. In these months, modeled flow rates average 9–24 cfs for the Existing Condition and 21–58 cfs for Alternative 1. Modeled monthly average flow rates are similar to the Existing Condition for July–March and range from 3–68 cfs for the Existing Condition and 3–71 cfs for Alternative 1.

The modeled creek temperatures with operation of Alternative 1 and differences from the Existing Condition also are the same or nearly the same as those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the Log Cabin Diversion Dam range from about 40–69°F for the Existing Condition and about 40–67°F for Alternative 1 for the full simulation period (refer to Appendix 4C, Table C3-Temp-8). Modeled monthly average temperatures for Alternative 1 are about 1–2°F lower in June through September compared to the Existing Condition. Temperature reductions at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 1°F lower with operation of Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Temp-9). Modeled monthly average temperatures at the confluence range from about 40–70°F for the Existing Condition and 40–69°F for Alternative 1 for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-8, operation of Alternative 1 would not cause substantial, if any, differences in Oregon Creek dissolved oxygen, turbidity, TSS, copper, iron, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 1 would not cause exceedance of an Oregon Creek water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the creek. Furthermore, operation of Alternative 1 would not cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the creek.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-9: Impacts on the Middle Yuba River Water Quality from Operation of Alternative 1

Modeled Middle Yuba River flow rates with operation of Alternative 1 and differences from the Existing Condition are similar to those described in YRDP Impact WQ-PP-9 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C3-Flow-8). Modeled monthly average Middle Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 1 compared to the Existing Condition. The increases are greatest in April, May, and June. In these months, modeled flow rates average 67–115 cfs for the Existing Condition and 197–244 cfs for Alternative 1. Modeled flow rates in July

through March average 29–202 cfs for the Existing Condition and 44–272 cfs for Alternative 1, depending on month.

The modeled river temperatures with operation of Alternative 1 and differences from the Existing Condition also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below Our House Diversion Dam with Alternative 1 are nearly the same as those for the Existing Condition. Modeled monthly average temperatures below the dam range from about 40–71°F for both scenarios for the full simulation period (refer to Appendix 4C, Table C3-Temp-10). Because of the higher flow rates, temperatures would be lower further downstream of the dam. Downstream of the confluence with Oregon Creek, modeled monthly average temperatures are up to about 2°F lower compared to the Existing Condition (Appendix 4C, Table C3-Temp-11). Upstream of the confluence with the North Yuba River modeled monthly average temperatures are also up to about 2°F lower compared to the Existing Condition (Appendix 4C, Table C3-Temp-12).

Therefore, for the same reasons provided in YRDP Impact WQ-PP-9, operation of Alternative 1 would not cause substantial, if any, differences in Middle Yuba River dissolved oxygen, turbidity, TSS, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 1 would not cause exceedance of a Middle Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-10: Impacts on Upper Yuba River Water Quality from Operation of Alternative 1

Modeled upper Yuba River flow rates with operation of Alternative 1 and differences from the Existing Condition are similar to those described in YRDP Impact WQ-PP-10 for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average upper Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 1 compared to the Existing Condition (refer to Appendix 4C, Table C3-Flow-11). Modeled flow rates below the Middle Yuba River confluence average 44–1,077 cfs for the Existing Condition and 78–1,123 cfs for Alternative 1, depending on month.

The modeled river temperatures with operation of Alternative 1 and differences from the Existing Condition also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the Middle Yuba River confluence range from about 40–73°F for the Existing Condition and 40–66°F for Alternative 1 for the full simulation period (refer to Appendix 4C, Table C3-Temp-13). Modeled monthly average temperatures for Alternative 1 are about 5–8°F lower in the summer compared to the Existing Condition. Temperature differences in the upper Yuba River at Colgate Powerhouse are smaller. Modeled monthly average temperatures at this location range from about 39–73°F for the Existing Condition and 39–71°F for Alternative 1 for the full simulation period (refer to Appendix

4C, Table C3-Temp-14). Modeled monthly average temperatures for Alternative 1 are about 1–3°F lower in the summer compared to the Existing Condition.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-10, operation of Alternative 1 would not cause substantial, if any, differences in upper Yuba River dissolved oxygen, turbidity, TSS, mercury, chromium, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 1 would not cause exceedance of an upper Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 1 would not cause measurable water quality degradation for the CWA Section 303(d)-listed constituents in the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-11: Impacts on Lower Yuba River Water Quality from Operation of Alternative 1

Modeled lower Yuba River flow rates with operation of Alternative 1 and differences from the Existing Condition are similar to those described in YRDP Impact WQ-PP-11 for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average lower Yuba River flow rates with operation of Alternative 1 are similar over the entire simulation period and across all water year types compared to the Existing Condition with differences being less than 5 percent (refer to Appendix 4C, Tables C3-Flow-1 through C3-Flow-4).

River temperatures with operation of Alternative 1 are also similar over the entire simulation period and across all water year types compared to the Existing Condition, with differences in modeled monthly average temperatures being less than 0.5°F (refer to Appendix 4C, Tables C3-Temp-1 through C3-Temp-5).

Therefore, for the same reasons provided in YRDP Impact WQ-PP-11, operation of Alternative 1 would not cause substantial, if any, differences in lower Yuba River dissolved oxygen, turbidity, TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 1 would not cause lower Yuba River water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of Alternative 1 would not result in a long-term measurable increase in mercury or copper in the lower Yuba River.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of Alternative 1.
As discussed in Chapter 4, Section 4.3.1.3, "Downstream Extent of the Project Area," operation of Alternative 1 would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River. A sensitivity analysis conducted to compare Feather River flow rates downstream of the lower Yuba River under the Existing Condition and Alternative 1 found that the average difference in monthly average flow rate would be 0.36%. Consequently, operation of Alternative 1 would not result in detectable changes in Feather River flows immediately downstream of the Yuba River, compared to the Existing Condition, and changes in water quality conditions downstream of the mouth of the Yuba River would not be measurable.

Therefore, operation of Alternative 1 would cause little, if any, differences in lower Feather River water quality constituents (e.g., dissolved oxygen, salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Existing Condition. As such, Sacramento River and Delta water quality also would not be measurably affected by operation of Alternative 1. Therefore, operation of Alternative 1 would not cause Feather River, Sacramento River, and Delta water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of Alternative 1 would not result in long-term measurable increases in constituent impairments in these waterbodies.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-13: Impacts on Surface Water Quality from Other Operation and Maintenance of Alternative 1.
Alternative 1 includes the same O&M activities as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-13, this impact would be **less than significant**.

YRDP Impact WQ-Alt1-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.
Alternative 1 consists of water storage and diversion facilities located within and adjacent to Project Area reservoirs and rivers where water levels fluctuate. In addition, some recreational facilities are located adjacent to Project Area reservoirs and rivers.

Modeling results show small (2 percent or less) differences in average New Bullards Bar Reservoir and Englebright Reservoir end-of-month storage and water surface elevations compared to the Existing Condition (refer to Appendix 4C, Tables C3-Reservoir-1 through C3-Reservoir-4). Modeling results also show that peak flow rates of Project Area rivers and creeks with Alternative 1 would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4C, Figures C3-Flow-1 through C3-Flow-48). Therefore, project facilities with Alternative 1 would not be at increased risk of inundation that would result in an increased risk of release of pollutants to Project Area waterbodies compared to the Existing Condition.

Furthermore, Alternative 1 operations would not result in an increased risk of release of pollutants downstream of project facilities. Modeling results show that peak lower Yuba River flow rates with operation of Alternative 1 are similar to the Existing Condition over the entire simulation period (refer to Appendix 4C, Figures C3-Flow-1 through C3-Flow-12).

Finally, as discussed in Chapter 4, Section 4.3.1.3, "Downstream Extent of the Project Area," operation of Alternative 1 would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River. Consequently, Alternative 1 would not result in an increased risk of release of pollutants downstream of the lower Yuba River.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt1-15: Consistency with Water Quality Control Plans.
Alternative 1 includes the same construction, operations, and maintenance activities as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-15, the YRDP Relicensing Project would have **no impact** on the implementation of a water quality control plan (i.e., Basin Plan), nor would the project conflict with a water quality control plan (i.e., Basin Plan).

Indirect Impact WQ-Alt1-1: Indirect Impacts on Water Quality of Reservoirs and Rivers Upstream of the YRDP from Alternative 1 YB/DS Operations.
Alternative 1 includes a contribution of 15,600 ac-ft of water from the Yuba-Bear/Drum-Spaulding projects that would be provided under new FERC licenses for those projects. The following discussion provides a programmatic analysis of the potential indirect impacts to water quality in waterbodies upstream of the YRDP associated with this component of Alternative 1, relative to the Existing Condition. As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YB/DS operations under Alternative 1 could result in lower storage in Jackson Meadows Reservoir, Bowman Lake, Fordyce Lake, and Lake Spaulding in all months and most water year types, particularly dry and critical years, compared to the Existing Condition. Lower storage volumes compared to the Existing Condition could result in higher water temperatures in these reservoirs under Alternative 1. Differences in other water quality constituent levels are not anticipated, given that the watershed inputs to the reservoirs and inflow quality would be the same as under the Existing Condition.

YB/DS operations under Alternative 1 also could result in modified flow rates in the following waterbodies.

- Middle Yuba River from Jackson Meadows Reservoir to Our House Diversion Dam
- Canyon Creek below Bowman Lake and Bowman-Spaulding Conduit Diversion Dam
- Fordyce Creek below Fordyce Lake
- South Yuba River below Lake Spaulding to Jones Bar

The primary effects on water quality from changes in flow rates are water temperature and turbidity and TSS levels. In months with lower flows, the waterbodies could have higher water temperatures, and lower turbidity and TSS levels. Conversely, in months with higher flows, the waterbodies could have lower water temperatures, but higher turbidity and TSS levels. See Chapter 9, Section 9.5.2.2.3, "Additional Operations-Related Impacts," and supporting Appendix 9C for discussion of anticipated temperature changes and effects on aquatic life beneficial uses, which is the beneficial use of these waterbodies most sensitive to temperature changes. Turbidity and TSS levels are expected to be within the range that occurs under the Existing Condition given that higher flows would be due to project operations, not associated with storm events. Dissolved oxygen levels are expected to be maintained near saturation due to the turbulent nature of the rivers and creeks. Differences in other water quality constituent levels are not anticipated given that the upstream watershed inputs to the rivers and creeks would be unaffected by the YB/DS operations.

Therefore, YB/DS operations under Alternative 1 would not cause water quality in the affected waterbodies to change by a frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses. As further discussed in Appendix 9C, water temperature conditions for the fish species evaluated in the YB/DS reaches under Alternative 1 relative to the Existing Condition could, but would not necessarily be substantially affected because of the operational flexibility of the upstream reservoirs and diversions in the manner in which the 15.6 TAF could be provided.

Narrows Impact WQ-Alt1-1: Impacts on Surface Water Quality from Operation of the Narrows Project.
Yuba Water proposes to continue to operate the Narrows Project under Alternative 1 in substantial conformance with existing operations, with minor modifications. The minor operations-related modifications that could affect water quality include operating the project to assist the YRDP with meeting instream flow requirements in the lower Yuba River at Smartsville and maintaining a minimum water surface elevation in Englebright Reservoir. However, the effects of these operations on Englebright Reservoir and lower Yuba River compared to the Existing Condition would not be beyond those described for YRDP Impact WQ-Alt1-6 and YRDP Impact WQ-Alt1-11, respectively. Any minimal effects of the Narrows Project operations under Alternative 1 on lower Yuba River water quality would have little to no effect on the water quality of the Feather River, Sacramento River, and Delta, given modeling results that show hydrologic operations on the Yuba River have little effect on downstream hydrology, as discussed in YRDP Impact WQ-Alt1-12.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

8.5.4 Alternative 1 compared to the Future Baseline

The impact analyses below depend, in part, on differences in reservoir storage and river/creek flow rates with Alternative 1 compared to the Future Baseline. Impacts of Alternative 1 not dependent on changes in reservoir storage and river/creek flow rates related to construction, operations,

and/or maintenance activities, and implementation plans are compared to the Existing Condition. Refer to Section 8.5.3 for those impacts.

YRDP Impact WQ-FAlt1-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of Alternative 1.

Modeled differences in New Bullards Bar Reservoir average end-of-month storage with operation of Alternative 1 compared to the Future Baseline are similar to those described in YRDP Impact WQ-FPP-5 for the YRDP Relicensing Project compared to the Future Baseline (refer to Appendix 4C, Table C4-Reservoir-1). Modeled average end-of-month storage with Alternative 1 for the full simulation period is 1–2 percent lower in September through February, and 0 percent different in March through August compared to the Future Baseline. Average end-of-month storage with Alternative 1 also differed little by water year type, with the difference being 0–2 percent in critical years, 0–2 percent in dry years, 0–1 percent in below normal years, 0–2 percent in above normal years, and 0–2 percent in wet years compared to the Future Baseline.

Modeled differences in average water surface elevation with Alternative 1 compared to the Future Baseline are also similar to those described for the YRDP Relicensing Project compared to the Future Baseline (Appendix 4C, Table C4-Reservoir-2). Modeled average end-of-month water surface elevation for Alternative 1 for the full simulation period is 0–3 feet lower, depending on month.

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-5, operation of Alternative 1 would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline. As such, operation of Alternative 1 would not cause exceedance of a New Bullards Bar Reservoir water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the reservoir. Furthermore, operation of Alternative 1 would not result in a long-term measurable increase in mercury in the reservoir, thus would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in New Bullards Bar Reservoir. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to New Bullards Bar Reservoir. Therefore, impacts on New Bullards Bar Reservoir water quality from operation of Alternative 1 would be **less than significant**.

YRDP Impact WQ-FAlt1-6: Impacts on Englebright Reservoir Water Quality from Operation of Alternative 1.

Modeled differences in Englebright Reservoir average end-of-month storage with operation of Alternative 1 compared to the Future Baseline are similar to those described in YRDP Impact WQ-FPP-6 for the YRDP Relicensing Project compared to the Future Baseline (refer to Appendix 4C, Table C4-Reservoir-3). Modeled average end-of-month storage with Alternative 1 for the full simulation period is 3 percent higher in September, 2 percent higher in October, and 0 percent different in the other months compared to the Future Baseline.

Modeled differences in average water surface elevation with Alternative 1 compared to the Future Baseline are also similar to those described for the YRDP Relicensing Project compared to the Future Baseline (refer to Appendix 4C, Table C4-Reservoir-4). Average end-of-month water surface elevation with Alternative 1 for the full simulation period is 2 feet higher in September, 1 foot higher in October, and no different for the other months compared to the Future Baseline.

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-6, operation of Alternative 1 would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline. As such, operation of Alternative 1 would not cause Englebright Reservoir water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the reservoir. Furthermore, operation of Alternative 1 would not result in a long-term measurable increase in mercury in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Englebright Reservoir. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Englebright Reservoir. Therefore, impacts on Englebright Reservoir water quality from operation of Alternative 1 would be **less than significant**.

YRDP Impact WQ-FAlt1-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of Alternative 1

Modeled North Yuba River flow rates with operation of Alternative 1 and differences from the Future Baseline are similar to those described in YRDP Impact WQ-FPP-7 for the YRDP Relicensing Project compared to the Future Baseline (refer to Appendix 4C, Table C4-Flow-5). Modeled monthly average North Yuba River flow rates are higher with operation of Alternative 1 during July through November over the entire simulation period and across all water year types compared to the Future Baseline. In July through November, modeled monthly average flow rates below New Bullards Bar Dam range from 8–9 cfs for the Future Baseline and 14–43 cfs for Alternative 1 for the full simulation period. The average flow increase in these months ranges from

6–34 cfs. In December through June, modeled monthly average flow rates are lower with operation of Alternative 1. In these months, the modeled monthly average flow rate ranges from 169–663 cfs for the Future Baseline and 121–648 cfs for Alternative 1.

The modeled river temperatures with operation of Alternative 1 and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project compared to the Future Baseline. Modeled monthly average temperatures below the dam range from about 45–53°F for the Future Baseline and about 45–51°F for Alternative 1 for the full simulation period (refer to Appendix C, Table C4-Temp-6). Modeled monthly average temperatures are about 4–6°F lower in June through September compared to the Future Baseline. In December, January, April, and May, modeled monthly average temperatures differ from the Future Baseline by 0.0–0.1°F.

Temperature reductions in the North Yuba River at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 9–14°F lower with operation of Alternative 1 compared to the Future Baseline (refer to Appendix 4C, Table C4-Temp-7). Modeled monthly average temperatures at the confluence range from about 45–68°F for the Future Baseline and 45–61°F for Alternative 1 for the full simulation period.

Because the above-described differences in river flow rate and temperature are either the same as or nearly the same as those for the YRDP Relicensing Project (future) compared to the Future Baseline, for the same reasons provided in YRDP Impact WQ-FPP-7, operation of Alternative 1 would not cause substantial, if any, differences in the North Yuba River dissolved oxygen, turbidity, TSS, methylmercury, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 1 would not cause exceedance of a North Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 1 would result in a long-term measurable increase in mercury that would cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the North Yuba River below New Bullards Bar Dam. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the North Yuba River. Therefore, impacts on the North Yuba River water quality from operation of Alternative 1 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt1-8: Impacts on Oregon Creek Water Quality from Operation of Alternative 1

Modeled Oregon Creek flow rates with operation of the Alternative 1 and differences from the Future Baseline are the same or nearly the same as those described in YRDP Impact WQ-FPP-8

for the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C4-Flow-6). The modeled increases are greatest in April, May, and June. In these months, modeled flow rates average 9–24 cfs for the Future Baseline and 21–58 cfs for Alternative 1. Modeled monthly average flow rates are similar to the Future Baseline for July–March and range from 3–68 cfs for the Future Baseline and 3–71 cfs for Alternative 1.

The modeled creek temperatures with operation of Alternative 1 and differences from the Future Baseline also are the same as those described for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average temperatures below the Log Cabin Diversion Dam range from about 40–69°F for the Future Baseline and about 40–67°F for Alternative 1 for the full simulation period (refer to Appendix 4C, Table C4-Temp-8). Modeled monthly average temperatures for Alternative 1 are about 1–2°F lower in June through September compared to the Future Baseline. Temperature reductions at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 1°F lower with operation of Alternative 1 compared to the Future Baseline (refer to Appendix 4C, Table C4-Temp-9). Modeled monthly average temperatures at the confluence range from about 40–70°F for the Future Baseline and 40–69°F for the YRDP Relicensing Project (future) for the full simulation period.

Because the above-described differences in river flow rate and temperature are either the same as or nearly the same as those for the YRDP Relicensing Project (future) compared to the Future Baseline, for the same reasons provided in YRDP Impact WQ-FPP-8, operation of Alternative 1 would not cause substantial, if any, differences in Oregon Creek dissolved oxygen, turbidity, TSS, copper, iron, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 1 would not cause exceedance of an Oregon Creek water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the creek. Furthermore, operation of Alternative 1 would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the creek.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Oregon Creek. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Oregon Creek. Therefore, impacts on Oregon Creek water quality from operation of Alternative 1 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt1-9: Impacts on the Middle Yuba River Water Quality from Operation of Alternative 1

Modeled Middle Yuba River flow rates with operation of Alternative 1 and differences from the Future Baseline are the same as or nearly the same as those described in YRDP Impact WQ-FPP-9 for the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix

4C, Table C4-Flow-8). Modeled monthly average Middle Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 1 compared to the Future Baseline (refer to Appendix 4C, Table C4-Flow-8). The increases are greatest in April, May, and June. In these months, modeled flow rates average 64–114 cfs for the Future Baseline and 197–280 cfs for Alternative 1. Modeled flow rates in July through March average 31–201 cfs for the Future Baseline and 44–272 cfs for Alternative 1, depending on month.

The modeled river temperatures with operation of Alternative 1 and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average temperatures below Our House Diversion Dam with Alternative 1 are nearly the same as those for the Future Baseline. Modeled monthly average temperatures below the dam range from about 40–71°F for both scenarios for the full simulation period (refer to Appendix 4C, Table C4-Temp-10). Because of the higher flow rates, temperatures would be lower further downstream of the dam. Downstream of the confluence with Oregon Creek, modeled monthly average temperatures are up to about 1°F lower compared to the Future Baseline (Appendix 4C, Table C4-Temp-11). Upstream of the confluence with the North Yuba River average temperatures are up to 1.6°F lower compared to the Future Baseline (Appendix 4C, Table C4-Temp-12).

Because the above-described differences in river flow rate and temperature are either the same as or nearly the same as those for the YRDP Relicensing Project (future) compared to the Future Baseline, for the same reasons provided in YRDP Impact WQ-FPP-9, operation of Alternative 1 would not cause substantial, if any, differences in Middle Yuba River dissolved oxygen, turbidity, TSS, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 1 would not cause exceedance of a Middle Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the Middle Yuba River. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Middle Yuba River. Therefore, impacts on the Middle Yuba River water quality from operation of Alternative 1 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt1-10: Impacts on Upper Yuba River Water Quality from Operation of Alternative 1

Modeled upper Yuba River flow rates with operation of Alternative 1 and differences from the Future Baseline are the same as or nearly the same as those described in YRDP Impact WQ-FPP-10 for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average upper Yuba River flow rates are higher year-round over the entire simulation period with

operation of Alternative 1 compared to the Future Baseline (refer to Appendix 4C, Table C4-Flow-11). Modeled flow rates below the Middle Yuba River confluence average 46–1,084 cfs for the Future Baseline and 78–1,123 cfs for the YRDP Relicensing Project (future), depending on month.

The modeled river temperatures with operation of Alternative 1 and differences from the Future Baseline also are the same as or nearly the same as those described for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average temperatures below the confluence range from about 40–73°F for the Future Baseline and 40–66°F for Alternative 1 for the full simulation period (refer to Appendix 4C, Table C4-Temp-13). Modeled monthly average temperatures for Alternative 1 are about 5–8°F lower in the summer compared to the Future Baseline. Temperature differences in the upper Yuba River at Colgate Powerhouse are smaller. Modeled monthly average temperatures at this location range from about 39–73°F for the Future Baseline and 39–71°F for Alternative 1 for the full simulation period (refer to Appendix 4C, Table C4-Temp-14). Modeled monthly average temperatures for the YRDP Relicensing Project (future) are about 1–3°F lower in the summer compared to the Future Baseline.

Because the above-described differences in river flow rate and temperature are either the same as or nearly the same as those for the YRDP Relicensing Project (future) compared to the Future Baseline, for the same reasons provided in YRDP Impact WQ-FPP-10, operation of Alternative 1 would not cause substantial, if any, differences in upper Yuba River dissolved oxygen, turbidity, TSS, mercury, chromium, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 1 would not cause exceedance of an upper Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 1 would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the upper Yuba River. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the upper Yuba River. Therefore, impacts on the upper Yuba River water quality from operation of Alternative 1 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt1-11: Impacts on Lower Yuba River Water Quality from Operation of Alternative 1

Modeled lower Yuba River flow rates with operation of Alternative 1 and differences from the Future Baseline are similar to those described in YRDP Impact WQ-FPP-11 for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average lower Yuba River flow rates with operation of Alternative 1 are similar over the entire simulation period

and across all water year types compared to the Future Baseline with differences being less than 5 percent (refer to Appendix 4C, Tables C4-Flow-1 through C4-Flow-4).

River temperatures with operation of Alternative 1 are also similar over the entire simulation period and across all water year types compared to the Future Baseline, with differences in modeled monthly average temperatures being less than 0.5°F (refer to Appendix 4C, Tables C4-Temp-1 through C4-Temp-5).

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-11, operation of Alternative 1 would not cause substantial, if any, differences in lower Yuba River dissolved oxygen, turbidity, TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of the YRDP Relicensing Project (future) would not cause lower Yuba River water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of Alternative 1 would not result in a long-term measurable increase in mercury or copper in the lower Yuba River.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Therefore, impacts on the lower Yuba River water quality from operation of Alternative 1 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt1-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of Alternative 1.

As discussed in YRDP Impact WQ-Alt1-12, the operation of Alternative 1 would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River based on a sensitivity analysis comparing Feather River flow rates downstream of the lower Yuba River under the Existing Condition and with the YRDP Relicensing Project. For the same reasons, operation of Alternative 1 would not result in detectable changes in Feather River flows immediately downstream of the Yuba River compared to the Future Baseline, and changes in water quality conditions downstream of the mouth of the Yuba River would not be measurable.

Therefore, operation of Alternative 1 would cause little, if any, differences in lower Feather River water quality constituents (e.g., dissolved oxygen, salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline. As such, Sacramento River and Delta water quality also would not be measurably affected by operation of Alternative 1. Therefore, operation of Alternative 1 would not cause Feather River, Sacramento River, and Delta water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect

to the constituents of concern, and thus would not adversely affect any beneficial uses in the river. Furthermore, operation of Alternative 1 would not result in long-term measurable increases in constituent impairments in these waterbodies.

CEQA Conclusion

Based on the above analysis, operation of Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Feather River, Sacramento River, or Delta. Furthermore, operation of Alternative 1 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Therefore, impacts on Feather River, Sacramento River, and Delta water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt1-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.

Alternative 1 consists of water storage and diversion facilities located within and adjacent to Project Area reservoirs and rivers where water levels fluctuate. In addition, some recreational facilities are located adjacent to Project Area reservoirs and rivers.

Modeling results show small (2 percent or less) differences in average New Bullards Bar Reservoir and Englebright Reservoir end-of-month storage and water surface elevations compared to the Future Baseline (refer to Appendix 4C, Tables C4-Reservoir-1 through C4-Reservoir-4). Modeling results also show that peak flow rates of Project Area rivers and creeks with the YRDP Relicensing Project would be the same or very similar to those that occur under the Future Baseline (refer to Appendix 4C, Figures C4-Flow-1 through C4-Flow-48). Therefore, project facilities with Alternative 1 would not be at increased risk of inundation that would result in an increased risk of release of pollutants to Project Area waterbodies compared to the Future Baseline.

Furthermore, Alternative 1 operations would not result in an increased risk of release of pollutants downstream of project facilities. Modeling results show that peak lower Yuba River flow rates with operation of Alternative 1 are similar to the Future Baseline over the entire simulation period (refer to Appendix 4C, Figures C4-Flow-1 through C4-Flow-12).

Finally, as discussed in Chapter 4, Section 4.3.1.3, "Downstream Extent of the Project Area," operation of the YRDP Relicensing Project would not result in a measurable change in lower Feather River flows downstream of the confluence with the lower Yuba River. Consequently, the YRDP Relicensing Project would not result in an increased risk of release of pollutants downstream of the lower Yuba River.

CEQA Conclusion

Based on the above discussion, Alternative 1 would have a **less-than-significant impact** on the risk of release of pollutants due to project inundation in flood hazard zones.

Indirect Impact WQ-FAlt1-1: Indirect Impacts on Water Quality of Reservoirs and Rivers Upstream of the YRDP from Alternative 1 YB/DS Operations.
Alternative 1 includes a contribution of 15,600 ac-ft of water from the Yuba-Bear/Drum-Spaulding projects that would be provided under new FERC licenses for those projects. The following discussion provides a programmatic analysis of the potential indirect impacts to water quality in waterbodies upstream of the YRDP associated with this component of Alternative 1 compared to the Future Baseline.

YB/DS operations under Alternative 1 could result in lower storage in Jackson Meadows Reservoir, Bowman Lake, Fordyce Lake, and Lake Spaulding in all months and most water year types, particularly dry and critical years, compared to the Future Baseline. Lower storage volumes compared to the Future Baseline could result in higher water temperatures in these reservoirs under Alternative 1. Differences in other water quality constituent levels are not anticipated, given that the watershed inputs to the reservoirs and inflow quality would be the same as under the Future Baseline.

YB/DS operations under Alternative 1 also could result in modified flow rates in the following waterbodies.

- Middle Yuba River from Jackson Meadows Reservoir to Our House Diversion Dam
- Canyon Creek below Bowman Lake and Bowman-Spaulding Conduit Diversion Dam
- Fordyce Creek below Fordyce Lake
- South Yuba River below Lake Spaulding to Jones Bar

The primary effects on water quality from changes in flow rates are water temperature and turbidity and TSS levels. In months with lower flows, the waterbodies could have higher water temperatures, and lower turbidity and TSS levels. Conversely, in months with higher flows, the waterbodies could have lower water temperatures, but higher turbidity and TSS levels. See Chapter 9, Section 9.5.2.2.3, "Additional Operations-Related Impacts," and supporting Appendix 9C for discussion of anticipated temperature changes and effects on aquatic life beneficial uses, which is the beneficial use of these waterbodies most sensitive to temperature changes. Turbidity and TSS levels are expected to be within the range that occurs under the Future Baseline given that higher flows would be due to project operations, not associated with storm events. Dissolved oxygen levels are expected to be maintained near saturation due to the turbulent nature of the rivers and creeks. Differences in other water quality constituent levels are not anticipated, given that the upstream watershed inputs to the rivers and creeks would be unaffected by the YB/DS operations. In addition, YB/DS operations would be subject to separate CWA Section 401 water quality certifications, which include provisions for the protection of water quality and maintenance of water quality standards.

Therefore, YB/DS operations under Alternative 1 would not cause water quality in the affected waterbodies to change by a frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses. As further discussed in Appendix 9C, water temperature conditions for the fish species evaluated in the YB/DS reaches under Alternative 1 relative to the Future Baseline could, but would not necessarily

be substantially affected because of: (1) operational flexibility (e.g., geographic source) of the YB/DS reservoirs in providing the 15.6 TAF; (2) permutations in the allocation (e.g., variable amounts) among YB/DS reservoirs; (3) the potential for provision of the 15.6 TAF through reductions in diversions (and exports out of the upper Yuba River Watershed), releases from storage, or a combination thereof; (4) implementation of ramping rates (both increases and decreases); and (5) resource agency technical assistance in fashioning the releases.

CEQA Conclusion

For purposes of this programmatic analysis, it is reasonably foreseeable that YB/DS operations under Alternative 1 would include available protective measures developed in collaboration with regulatory agencies to ensure that Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in waterbodies upstream of the YRDP. Furthermore, operation of Alternative 1 are unlikely to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff in waterbodies upstream of the YRDP. Therefore, indirect surface water quality impacts on waterbodies upstream of the YRDP would be **less than significant**. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available. the upstream reservoirs and diversions in the manner in which the 15.6 TAF could be provided.

Narrows Impact WQ-FAlt1-1: Impacts on Surface Water Quality from Operation of the Narrows Project.

Yuba Water proposes to continue to operate the Narrows Project under Alternative 1 in substantial conformance with existing operations, with minor modifications. The minor operations-related modifications that could affect water quality include operating the project to assist the YRDP with meeting instream flow requirements in the lower Yuba River at Smartsville and maintaining a minimum water surface elevation in Englebright Reservoir. However, the effects of these operations on Englebright Reservoir and lower Yuba River compared to the Future Baseline would not be beyond those described for YRDP Impact WQ-FAlt1-6 and YRDP Impact WQ-FAlt1-11, respectively. Any minimal effects of the Narrows Project operations under Alternative 1 on lower Yuba River water quality would have little to no effect on the water quality of the Feather River, Sacramento River, and Delta, given modeling results that show hydrologic operations on the Yuba River have little effect on downstream hydrology, as discussed in YRDP Impact WQ-FAlt1-12.

CEQA Conclusion

Based on the above analysis, operation of the Narrows Project under Alternative 1 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River, lower Feather River, Sacramento River, or Delta. Furthermore, operation of the Narrows Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in

substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Finally, operation of the Narrows Project under Alternative 1 would not result in an increased risk of release of pollutants to Project Area waterbodies or conflict with or obstruct implementation of a water quality control plan. Therefore, impacts on Yuba River, Feather River, Sacramento River, and Delta water quality from operation of the Narrows Project under Alternative 1 would be **less than significant**. No CEQA mitigation is required.

8.5.5 Alternative 2 compared to the Existing Condition

Construction, operations, and maintenance activities for the Proposed Projects under the new FERC licenses have the potential to affect surface water quality of waterbodies in the Project Area. The discussions below address these potential impacts.

Note that operations-related impacts on surface water quality that are dependent on reservoir storage and river/creek flow rate changes do not have CEQA impact conclusions in this section. Discussion for surface water quality impacts that are dependent on reservoir storage and river/creek flow rate changes compared to the Existing Condition is provided for informational purposes only. CEQA impact conclusions for these impacts are based on the comparisons between the alternative and the Future Baseline, presented in Section 8.5.6; refer to Section 8.4.3, "Water Operations-Related Impacts," for additional information regarding the use of the dual baseline for impact determinations.

YRDP Impact WQ-Alt2-1: Impacts on Surface Water Quality from Modification of Power Generation- and Water Conveyance-Related Facilities for the YRDP.
Alternative 2 includes the same modifications to power generation- and water conveyance-related facilities as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-1, this impact would be **less than significant**.

YRDP Impact WQ-Alt2-2: Impacts on Surface Water Quality from Implementation of the YRDP Recreation Facilities Plan
Alternative 2 includes the same *Recreation Facilities Plan* as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-2, this impact would be **less than significant**.

YRDP Impact WQ-Alt2-3: Impacts on Surface Water Quality from Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan
Alternative 2 includes the same *Log Cabin and Our House Diversion Dams Sediment Management Plan* as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-3, this impact would be **less than significant**.

YRDP Impact WQ-Alt2-4: Impacts on Surface Water Quality from Other YRDP Implementation Plans
Alternative 2 includes the same implementation plans as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-4, this impact would be **less than significant**.

YRDP Impact WQ-Alt2-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of Alternative 2.

Modeling results show substantial decreases in New Bullards Bar Reservoir average end-of-month storage with Alternative 2 compared to the Existing Condition (refer to Appendix 4C, Table C5-Reservoir-1). Average end-of-month storage with Alternative 2 for the full simulation period is 5–11 percent lower depending on month for the full simulation period compared to the Existing Condition. Lower storage would occur across all water year types.

Modeling results also show substantial decreases in end-of-month water surface elevation with Alternative 2 compared to the Existing Condition (refer to Appendix 4C, Table C5-Reservoir-2). Average end-of-month water surface elevation with Alternative 2 for the full simulation period is 10–22 feet lower, depending on month, compared to the Existing Condition. The greatest decreases in water surface elevation are in dry years, when modeled reductions average up to 41 feet in June.

Temperature would be the water quality condition most affected by changes in reservoir end-of-month storage and water surface elevation, with the primary effect being a smaller coldwater pool. The reservoir would continue to stratify seasonally as it does under the Existing Condition. The differences in reservoir residence time and potential more frequent fluctuations in water surface elevation could affect sediment wetting and drying cycles, which may affect methylmercury formation and water column concentrations. There could also be seasonal differences in nutrient cycling, which could affect primary productivity and algal blooms, which in turn could result in oxygen depletion in the reservoir hypolimnion when the algae die and decay. Substantial difference in other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) are not expected compared to the Existing Condition because levels of these constituents are primarily affected by inflow quality, which is not expected to be substantially different from the Existing Condition.

This alternative includes all the proposed measures and conditions of the Proposed Projects. This includes all proposed CWA Section 401 WQC conditions, including Condition 19, "Mercury Management" (refer to Appendix 2E). This also includes proposed Water Quality Monitoring Plan (WR8), which would involve monitoring water quality conditions in YRDP reservoirs and impoundments and YRDP-affected reaches of the North, Middle, and mainstream Yuba rivers, and in Oregon Creek. Even with the proposed water quality-related conditions and measures, the degree to which anticipated changes in water temperatures, nutrient cycling, and methylmercury formation would have an adverse effect on reservoir beneficial uses is uncertain, but it could be adverse for aquatic life and recreation-related beneficial uses.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-6: Impacts on Englebright Reservoir Water Quality from Operation of Alternative 2.

Modeling results show little to no difference in Englebright Reservoir average end-of-month storage with Alternative 2 compared to the Existing Condition (refer to Appendix 4C, Table C5-Reservoir-3). Average end-of-month storage with Alternative 2 for the full simulation period is 2

percent higher in April and May, 1 percent higher in June, and 0 percent different in the other months compared to the Existing Condition.

Modeling results also show little to no difference in end-of-month water surface elevation with Alternative 2 compared to the Existing Condition (refer to Appendix 4C, Table C5-Reservoir-4). Average end-of-month water surface elevation with Alternative 2 for the full simulation period is 1 foot higher in April, May, and June, and no different for the other months compared to the Existing Condition.

Because there would be little to no change in Englebright Reservoir end-of-month storage and water surface elevation, there would be little to no change in reservoir temperature, dissolved oxygen or nutrients. Furthermore, based on the small differences in modeled storage and water surface elevation, operation of Alternative 2 would have little to no effect on the reservoir stratification, residence time, and water depth that could affect water column mercury concentrations, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon).

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of Alternative 2

Modeled North Yuba River flow rates with operation of Alternative 2 and differences from the Existing Condition are somewhat similar to those described in YRDP Impact WQ-PP-7 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C5-Flow-5). Modeled monthly average North Yuba River flow rates are higher with operation of Alternative 2 during July through November over the entire simulation period and across all water year types compared to the Existing Condition. In July through November, modeled monthly average flow rates below New Bullards Bar Dam range from 8–9 cfs for the Existing Condition and 14–58 cfs for Alternative 2 for the full simulation period. The average flow increase in these months ranges from 6–49 cfs. In December through June, modeled monthly average flow rates are lower with operation of Alternative 2. In these months, the modeled monthly average flow rate ranges from 168–657 cfs for the Existing Condition and 102–543 cfs for Alternative 2.

The modeled river temperatures with operation of Alternative 2 and differences from the Existing Condition also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the dam range from about 45–53°F for the Existing Condition and about 45–51°F for Alternative 2 for the full simulation period (refer to Appendix C, Table C5-Temp-6). Modeled monthly average temperatures are about 4–6°F lower in June through September compared to the Existing Condition. In December, January, April, and May, modeled monthly average temperatures differ from the Existing Condition by 0.0–0.1°F.

Temperature reductions in the North Yuba River at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 9–14°F lower with operation of Alternative 2 compared to the Existing

Condition (refer to Appendix 4C, Table C5-Temp-7). Modeled monthly average temperatures at the confluence range from about 45–68°F for the Existing Condition and 45–61°F for Alternative 2 for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-7, operation of Alternative 2 would not cause substantial, if any, differences in the North Yuba River dissolved oxygen, turbidity, TSS, methylmercury, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 2 would not cause exceedance of a North Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 2 would result in a long-term measurable increase in mercury that would cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-8: Impacts on Oregon Creek Water Quality from Operation of Alternative 2

Modeled Oregon Creek flow rates with operation of Alternative 2 differences from the Existing Condition are somewhat similar to those described in YRDP Impact WQ-PP-8 for the YRDP Relicensing Project compared to the Existing Condition (refer to Appendix 4C, Table C5-Flow-6). The modeled increases are greatest in April, May, and June. In these months, modeled flow rates average 9–24 cfs for the Existing Condition and 21–54 cfs for Alternative 2. Modeled monthly average flow rates are similar to the Existing Condition for July–March and range from 3–68 cfs for both the Existing Condition and Alternative 2.

The modeled creek temperatures with operation of Alternative 2 and differences from the Existing Condition also are similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the Log Cabin Diversion Dam range from about 40–69°F for the Existing Condition and about 40–67°F for Alternative 2 for the full simulation period (refer to Appendix 4C, Table C5-Temp-8). Modeled monthly average temperatures for Alternative 2 are about 1–2°F lower in June through September compared to the Existing Condition. Temperature reductions at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 1°F lower with operation of Alternative 2 compared to the Existing Condition (refer to Appendix 4C, Table C5-Temp-9). Modeled monthly average temperatures at the confluence range from about 40–70°F for the Existing Condition and 40–69°F for Alternative 2 for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-8, operation of Alternative 2 would not cause substantial, if any, differences in Oregon Creek dissolved oxygen, turbidity, TSS, copper, iron, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 2 would not cause exceedance of an Oregon Creek water quality objective/criterion by frequency,

magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the creek. Furthermore, operation of Alternative 2 would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the creek.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-9: Impacts on the Middle Yuba River Water Quality from Operation of Alternative 2

Modeled Middle Yuba River flow rates with operation of Alternative 2 and differences from the Existing Condition would be higher than those described in YRDP Impact WQ-PP-9 for the YRDP Relicensing Project compared to the Existing Condition in all months (refer to Appendix 4C, Table C5-Flow-8). Modeled monthly average Middle Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 2 compared to the Existing Condition. The increases are greatest, on a percent basis, in April, May, and June. In these months, modeled flow rates average 67–115 cfs for the Existing Condition and 276–483 cfs for Alternative 2. Modeled flow rates in July through March average 29–202 cfs for the Existing Condition and 44–441 cfs for Alternative 2, depending on month.

The modeled river temperatures with operation of Alternative 2 and differences from the Existing Condition are lower than those described for the YRDP Relicensing Project compared to the Existing Condition due to higher river flow rates. Modeled monthly average temperatures below Our House Diversion Dam with Alternative 2 are nearly the same as those for the Existing Condition in October through April and about 0.5–1°F lower in May through September. Modeled monthly average temperatures below the dam range from about 40–71°F for both scenarios for the full simulation period (refer to Appendix 4C, Table C5-Temp-10). Because of the higher flow rates, temperatures would be lower further downstream of the dam. Downstream of the confluence with Oregon Creek, modeled monthly average temperatures are up to about 2°F lower compared to the Existing Condition (Appendix 4C, Table C5-Temp-11). Upstream of the confluence with the North Yuba River modeled monthly average temperatures are also up to about 2°F lower compared to the Existing Condition (Appendix 4C, Table C5-Temp-12).

Therefore, for the same reasons provided in YRDP Impact WQ-PP-9, operation of Alternative 2 would not cause substantial, if any, differences in Middle Yuba River dissolved oxygen, turbidity, TSS, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 2 would not cause exceedance of a Middle Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-10: Impacts on Upper Yuba River Water Quality from Operation of Alternative 2

Modeled upper Yuba River flow rates with operation of Alternative 2 and differences from the Existing Condition would be higher than those described in YRDP Impact WQ-PP-10 for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average upper Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 2 compared to the Existing Condition (refer to Appendix 4C, Table C5-Flow-11). Modeled flow rates below the Middle Yuba River confluence average 44–1,077 cfs for the Existing Condition and 76–1,167 cfs for Alternative 2, depending on month.

The modeled river temperatures with operation of Alternative 2 and differences from the Existing Condition would be similar to those described for the YRDP Relicensing Project compared to the Existing Condition. Modeled monthly average temperatures below the Middle Yuba River confluence range from about 40–73°F for the Existing Condition and 40–66°F for Alternative 2 for the full simulation period (refer to Appendix 4C, Table C5-Temp-13). Modeled monthly average temperatures for Alternative 2 are about 5–8°F lower in the summer compared to the Existing Condition. Temperature differences in the upper Yuba River at Colgate Powerhouse are smaller. Modeled monthly average temperatures at this location range from about 39–73°F for the Existing Condition and 39–71°F for Alternative 2 for the full simulation period (refer to Appendix 4C, Table C5-Temp-14). Modeled monthly average temperatures for Alternative 2 are about 1–4°F lower in the summer compared to the Existing Condition.

Therefore, for the same reasons provided in YRDP Impact WQ-PP-10, operation of Alternative 2 would not cause substantial, if any, differences in upper Yuba River dissolved oxygen, turbidity, TSS, mercury, chromium, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. As such, operation of Alternative 2 would not cause exceedance of an upper Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 2 would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-11: Impacts on Lower Yuba River Water Quality from Operation of Alternative 2

Modeled lower Yuba River flow rates with operation of Alternative 2 and differences from the Existing Condition are substantially higher in some months than those described in YRDP Impact WQ-PP-11 for the YRDP Relicensing Project. Modeled monthly average lower Yuba River flow rates with operation of Alternative 2 are higher particularly in November through May, and lower in July through September over the entire simulation period and across all water year types compared to the Existing Condition with differences sometimes being greater than 10 percent (refer to Appendix 4C, Tables C5-Flow-1 through C5-Flow-4).

River temperatures with operation of Alternative 2 are similar or slightly cooler during November through April, and warmer in May through October over the entire simulation period and across all water year types compared to the Existing Condition. Modeled monthly average temperatures are about 0–1°F lower in November through April and about 3–5°F warmer in June through August compared to the Existing Condition (refer to Appendix 4C, Tables C5-Temp-1 through C5-Temp-5).

As discussed in YRDP Impact WQ-Alt2-6, operation of the YRDP Relicensing Project would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) in Englebright Reservoir compared to the Existing Condition. Furthermore, operations would not affect the level that water is released from the reservoir. Therefore, the quality of water released into the lower Yuba River would be similar to the water quality under the Existing Condition.

While river flow rates would differ from the Existing Condition, sometimes by more than 10 percent, operation of Alternative 2 would not cause substantial, if any, differences in lower Yuba River dissolved oxygen, turbidity, TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Existing Condition. River flows could maintain dissolved oxygen levels near saturation. The higher flow rates would primarily occur in months with already comparatively higher flow rates, therefore, little to no difference in TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, nutrients, trace metals, organic carbon) is expected. As such, operation of Alternative 2 would not cause lower Yuba River water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

YRDP Impact WQ-Alt2-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of Alternative 2.

Operation of Alternative 2 would result in modified flows in the lower Yuba River. Operation of Alternative 2 does not involve alteration of existing drainage patterns in the lower Feather River, Sacramento River, or Delta. The analysis below focuses on effects to water quality of these waterbodies from modified lower Yuba River flows.

Alternative 2 operations have the potential to affect the water quality of the lower Feather River through changes to Yuba River tributary inflows. The primary way in which Alternative 2 operations could affect lower Feather River water quality is through changes in the quantity and timing of lower Yuba River inflows.

Modeling results show higher Yuba River flow rates at Marysville in October through June, particularly during November, December, April, and May, and lower flow rates in July through September (Appendix 4C, Table C5-Flow-4). For the Existing Condition, modeled monthly

average flow rates range from 541 cfs in October to 4,575 cfs in March. For Alternative 2, modeled monthly average flow rates range from 559 cfs in October to 4,685 cfs in March.

Greater Yuba River inflows to the Feather River would mean that lower Feather River water quality conditions would be more influenced by Yuba River water quality, assuming Feather River flow rates stay as they are under the Existing Condition and release rates from Oroville Reservoir are unchanged in response to the higher Yuba River flow contribution. Table 8.5-6 presents the monthly average lower Yuba River flow rates with historical monthly average flow rates for the Feather River and the Sacramento River. While comparing modeled flow rates to historical flow rates may be viewed as an "apples to oranges" comparison because of different hydrologic periods and methods for deriving the data, it does provide an indication of the relative influence that higher Yuba River outflows could have on Feather River water quality conditions.

Table 8.5-6. Comparison of Modeled Differences in Lower Yuba River Flow Rate to Historical Flow Rates for the Feather River and Sacramento River.

Month	Feather River Flow Rate Upstream of Yuba River: Historical [1] (cfs)	Sacramento River Flow Rate at Verona (downstream of Feather River): Historical [2] (cfs)	Yuba River Flow Rate near Marysville for Alternative 2: Modeled [3] (cfs)	Yuba River Flow Rate Difference from the Existing Condition: Modeled [3] (cfs)	Yuba River Flow Rate Difference as a Percent of Feather River Flow Rate	Yuba River Flow Rate Difference as a Percent of Sacramento River Flow Rate
January	6,751	27,204	3,640	179	3%	1%
February	12,676	30,194	4,276	225	2%	1%
March	12,342	30,501	4,685	110	1%	0%
April	11,532	23,020	4,087	865	8%	4%
May	8,679	17,984	3,892	647	7%	4%
June	6,363	15,252	2,794	180	3%	1%
July	6,035	14,372	1,159	-2	0%	0%
August	6,066	14,355	852	-210	-3%	-1%
September	5,794	13,853	627	-88	-2%	-1%
October	3,958	9,782	559	17	0%	0%
November	3,059	10,051	921	149	5%	1%
December	4,628	19,346	2,136	228	5%	1%

[1] Data for the Feather River at Boyd's Landing for December 2010 through February 2025. Source: California Data Exchange Center 2025a.

[2] Data for the Sacramento River at Verona for January 1991 through February 2025. Source: California Data Exchange Center 2025b.

[3] From Appendix 4C, Table C5-Flow-4, Average monthly flow in the lower Yuba River near Marysville under the Alternative 2 and Existing Condition scenarios over the entire simulation period and by water year type.

As shown in Table 8.5-6, the average increase in Yuba River inflow into the Feather River would be 8 percent in April, 7 percent in May, and 0–5 percent in the remaining months of the year, with the exceptions of August and September. In August and September, modeled monthly average Yuba River inflow under Alternative 2 is about 88–210 cfs lower than for the Existing Condition. For water quality constituents with concentrations that are higher in the Feather River than in the Yuba River, the increased Yuba River inflow, particularly in April and May, could improve water quality conditions in the Feather River. Examples may include further dilution of pesticides or

TSS. Conversely, for water quality constituent concentrations that are higher in the Yuba River than in the Feather River, the higher Yuba River inflow would worsen water quality downstream of the confluence for these constituents. For all other months when the change in Yuba River inflow would be 5 percent or less of background Feather River flow, water quality changes would be small and likely not measurable for most constituents.

Similarly, the average changes of higher Yuba River inflows to the Feather River would mean that water quality conditions in the Sacramento River downstream of the Feather River would be more influenced by Yuba River water quality, assuming Sacramento River flow rates stay as they are under the Existing Condition and release rates from Shasta Reservoir are unchanged in response to the higher Yuba River flow contribution to the Sacramento River. As shown in Table 8.5-6, the average changes in Yuba River flow would be 4 percent, or less, of background Sacramento River flow with most monthly average changes being 1 percent or less. Such small additional Yuba River flow contributions to the Sacramento River would not change Sacramento River water quality substantially, if even measurably, for any water quality constituent/parameter.

The modeled changes in Yuba River flows would have little to no effect on Delta water quality. Total Delta inflows from the Sacramento River, Yolo Bypass, San Joaquin River, and east side tributaries (i.e., Mokelumne, Calaveras, and Cosumnes rivers) average 21.8 million ac-ft per year. In contrast, the average additional inflow to the Delta from the Yuba River, based on the average changes in Table 8.5-6 is about 0.1 million ac-ft, which is about 0.5 percent of the annual average Delta inflow. Nevertheless, the small additional Delta inflow that could occur in April and May could result in small salinity improvements in some areas of the Delta. However, if the coordinated operations of the CVP and SWP reacts to the larger flow contribution from the Yuba River, thereby commensurately reducing concurrent releases from Shasta, Oroville, or Folsom reservoirs, then no improved salinity conditions would occur in the Delta.

Overall, these waterbodies would still be high quality waters, and these flow differences would not exacerbate CWA Section 303(d) impairments.

This discussion and the percentage of Yuba River flow rates relative to the Feather River, Sacramento River, and Delta inflow ignore the fact that implementation of Alternative 2 by Yuba Water would mean that the CVP also would be operated to release more water into the Sacramento River and the SWP would be operated to release more water into the Feather River, adding to Delta inflow. Therefore, the effects of the higher Yuba River inflow rates on water quality in these waterbodies would likely not be detectable.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the Feather River, Sacramento River, or Delta. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Therefore, impacts from operation of Alternative 2 on Feather River, Sacramento River, and Delta water quality would be **less than significant**.

YRDP Impact WQ-Alt2-13: Impacts on Surface Water Quality from Other Operation and Maintenance of Alternative 2.
Alternative 2 includes the same O&M activities as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-13, this impact would be **less than significant**.

YRDP Impact WQ-Alt2-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations.
Alternative 2 consists of water storage and diversion facilities located within and adjacent to Project Area reservoirs and rivers where water levels fluctuate. In addition, some recreational facilities are located adjacent to Project Area reservoirs and rivers.

Modeling results show substantial decreases in average New Bullards Bar Reservoir and Englebright Reservoir end-of-month storage and water surface elevations compared to the Existing Condition (refer to Appendix 4C, Tables C5-Reservoir-1 through C5-Reservoir-4). Modeling results also show that peak flow rates of Project Area rivers and creeks with Alternative 2 would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4C, Figures C5-Flow-1 through C5-Flow-48). Therefore, project facilities with Alternative 2 would not be at increased risk of inundation that would result in an increased risk of release of pollutants to Project Area waterbodies compared to the Existing Condition.

Furthermore, Alternative 2 operations would not result in an increased risk of release of pollutants downstream of project facilities. Modeling results show that peak lower Yuba River flow rates with operation of Alternative 2 are similar to the Existing Condition over the entire simulation period (refer to Appendix 4C, Figures C5-Flow-1 through C5-Flow-12).

Finally, as discussed in YRDP Impact WQ-Alt2-12, operation of Alternative 2 would result in small (5% or less) changes in lower Feather River flows downstream of the confluence with the lower Yuba River when river flow rates are highest, and smaller (1% or less) changes in Sacramento River flow rates. Consequently, Alternative 2 would not result in an increased risk of release of pollutants downstream of the lower Yuba River.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.4.

YRDP Impact WQ-Alt2-15: Consistency with Water Quality Control Plans.
Alternative 2 includes the same construction, operations, and maintenance activities as the Proposed Projects. Thus, for the same reasons explained for YRDP Impact WQ-PP-15, the YRDP Relicensing Project would have **no impact** on the implementation of a water quality control plan (i.e., Basin Plan), nor would the project conflict with a water quality control plan (i.e., Basin Plan).

Narrows Impact WQ-Alt2-1: Impacts on Surface Water Quality from Operation of the Narrows Project.
Yuba Water proposes to continue to operate the Narrows Project under Alternative 2 in substantial conformance with existing operations, with minor modifications. The minor operations-related modifications that could affect water quality include operating the project to assist the YRDP with meeting instream flow requirements in the lower Yuba River at Smartsville and maintaining a

minimum water surface elevation in Englebright Reservoir. However, the effects of these operations on Englebright Reservoir and lower Yuba River compared to the Existing Condition would not be beyond those described for YRDP Impact WQ-Alt2-6 and YRDP Impact WQ-Alt2-11, respectively. Any minimal effects of the Narrows Project operations under Alternative 2 on lower Yuba River water quality would have little to no effect on the water quality of the Feather River, Sacramento River, and Delta, given modeling results that show hydrologic operations on the Yuba River have little effect on downstream hydrology, as discussed in YRDP Impact WQ-Alt2-12.

As described in Section 8.4.3, this discussion is provided for informational purposes and the appropriate comparison for impact determinations is to the Future Baseline, which is presented in Section 8.5.6.

8.5.6 Alternative 2 compared to the Future Baseline

The impact analyses below depend, in part, on differences in reservoir storage and river/creek flow rates with Alternative 2 compared to the Future Baseline. Impacts of Alternative 2 not dependent on changes in reservoir storage and river/creek flow rates related to construction, operations, and/or maintenance activities, and implementation plans are compared to the Existing Condition. Refer to Section 8.5.5 for those impacts.

YRDP Impact WQ-FAlt2-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of Alternative 2.
Modeling results show substantial decreases in New Bullards Bar Reservoir average end-of-month storage with Alternative 2 relative to the Future Baseline (refer to Appendix 4C, Table C6-Reservoir-1). Average end-of-month storage with Alternative 2 for the full simulation period is 7–11 percent lower depending on month for the full simulation period compared to the Future Baseline. Lower storage would occur across all water year types.

Modeling results also show substantial decreases in end-of-month water surface elevation with Alternative 2 compared to the Future Baseline (refer to Appendix 4C, Table C6-Reservoir-2). Average end-of-month water surface elevation with Alternative 2 for the full simulation period is 14–24 feet lower, depending on month, compared to the Future Baseline. The greatest decreases in water surface elevation are in dry years, when modeled reductions average up to 46 feet in June.

Temperature would be the water quality condition most affected by changes in reservoir end-of-month storage and water surface elevation, with the primary effect being a smaller coldwater pool. The reservoir would continue to stratify seasonally as would under the Future Baseline. The differences in reservoir residence time and potential more frequent fluctuations in water surface elevation could affect sediment wetting and drying cycles, which may affect methylmercury formation and water column concentrations. There could also be seasonal differences in nutrient cycling, which could affect primary productivity and algal blooms, which in turn could result in oxygen depletion in the reservoir hypolimnion when the algae die and decay. Substantial difference in other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline would be unlikely because levels of these constituents are primarily affected by inflow quality, which is not expected to be substantially different from the Future Baseline.

This alternative includes all the proposed measures and conditions of the Proposed Projects. This includes all proposed CWA Section 401 WQC conditions, including Condition 19, "Mercury Management" (refer to Appendix 2E). This also includes proposed Water Quality Monitoring Plan (WR8), which would involve monitoring water quality conditions in YRDP reservoirs and impoundments and YRDP-affected reaches of the North, Middle, and mainstream Yuba rivers, and in Oregon Creek. Even with the proposed water quality-related conditions and measures, the degree to which anticipated changes in water temperatures, nutrient cycling, and methylmercury formation would have an adverse effect on reservoir beneficial uses is uncertain, but it could be adverse for aquatic life and recreation-related beneficial uses.

The SWRCB's environmental analysis in the Draft Staff Report for the updates to the Bay-Delta Plan considers potential effects to upstream reservoir water quality a potentially significant impact (SWRCB 2023, p.1-34). The SWRCB's (2023) Draft Staff Report includes "Mitigation Measure MM-SW-a,f:" to address potentially significant water quality impacts. This mitigation measure addresses mercury impacts, temperature control and reservoir management, harmful algae blooms and invasive aquatic weeds, and municipal water quality protection. However, even with implementation of this mitigation measure, the SWRCB concluded that water quality impacts would remain potentially significant (SWRCB 2023, pp.1-19, 1-34).

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to New Bullards Bar Reservoir. However, operation of Alternative 2 could result in violation of water quality standards or otherwise substantially degrade surface water quality in New Bullards Bar Reservoir. With implementation of the SWRCB's proposed mitigation, this impact would remain potentially significant. Therefore, surface water quality impacts from operation of Alternative 2 on New Bullards Bar Reservoir would be **potentially significant and unavoidable**.

YRDP Impact WQ-FAlt2-6: Impacts on Englebright Reservoir Water Quality from Operation of Alternative 2.

Modeling results show little to no difference in Englebright Reservoir average end-of-month storage with Alternative 2 compared to the Future Baseline (refer to Appendix 4C, Table C6-Reservoir-3). Average end-of-month storage with Alternative 2 for the full simulation period is 2 percent higher in April and May, 1 percent higher in June, and 0 percent different in the other months compared to the Future Baseline.

Modeling results also show little to no difference in end-of-month water surface elevation with Alternative 2 compared to the Future Baseline (refer to Appendix 4C, Table C6-Reservoir-4). Average end-of-month water surface elevation with Alternative 2 for the full simulation period is 1 foot higher in April, May, and June, and no different for the other months compared to the Future Baseline.

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-6, operation of Alternative 2 would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles,

phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) compared to the Future Baseline. As such, operation of Alternative 2 would not cause Englebright Reservoir water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the reservoir. Furthermore, operation of Alternative 2 would not result in a long-term measurable increase in mercury in the reservoir.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Englebright Reservoir. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Englebright Reservoir. Therefore, impacts on Englebright Reservoir water quality from operation of Alternative 2 would be **less than significant**.

YRDP Impact WQ-FAlt2-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of the Alternative 2

Modeled North Yuba River flow rates with operation of Alternative 2 and differences from the Future Baseline are somewhat similar to those described in YRDP Impact WQ-FPP-7 for the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C6-Flow-5). Modeled monthly average North Yuba River flow rates are higher with operation of Alternative 2 during July through November over the entire simulation period and across all water year types compared to the Future Baseline. In July through November, modeled monthly average flow rates below New Bullards Bar Dam range from 8–9 cfs for the Future Baseline and 14–58 cfs for Alternative 2 for the full simulation period. The average flow increase in these months ranges from 6–49 cfs. In December through June, modeled monthly average flow rates are lower with operation of Alternative 2. In these months, the modeled monthly average flow rate ranges from 169–663 cfs for the Future Baseline and 102–543 cfs for Alternative 2.

The modeled river temperatures with operation of Alternative 2 and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average temperatures below the dam range from about 45–53°F for the Future Baseline and about 45–51°F for Alternative 2 for the full simulation period (refer to Appendix C, Table C6-Temp-6). Modeled monthly average temperatures are about 4–6°F lower in June through September compared to the Future Baseline. In December, January, April, and May, modeled monthly average temperatures differ from the Future Baseline by 0.0–0.1°F.

Temperature reductions in the North Yuba River at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 9–14°F lower with operation of Alternative 2 compared to the Future Baseline (refer to Appendix 4C, Table C6-Temp-7). Modeled monthly average temperatures at the

confluence range from about 45–68°F for the Future Baseline and 45–61°F for Alternative 2 for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-7, operation of Alternative 2 would not cause substantial, if any, differences in the North Yuba River dissolved oxygen, turbidity, TSS, methylmercury, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 2 would not cause exceedance of a North Yuba River water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 2 would result in a long-term measurable increase in mercury that would cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the North Yuba River below New Bullards Bar Dam. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the North Yuba River. Therefore, impacts on the North Yuba River water quality from operation of Alternative 2 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt2-8: Impacts on Oregon Creek Water Quality from Operation of Alternative 2

Modeled Oregon Creek flow rates with operation of Alternative 2 differences from the Future Baseline are somewhat similar to those described in YRDP Impact WQ-FPP-8 for the YRDP Relicensing Project (future) compared to the Future Baseline (refer to Appendix 4C, Table C6-Flow-6). The modeled increases are greatest in April, May, and June. In these months, modeled flow rates average 9–24 cfs for the Future Baseline and 21–54 cfs for Alternative 2. Modeled monthly average flow rates are similar to the Future Baseline for July–March and range from 3–68 cfs for both the Future Baseline and Alternative 2.

The modeled creek temperatures with operation of Alternative 2 and differences from the Future Baseline also are similar to those described for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average temperatures below the Log Cabin Diversion Dam range from about 40–69°F for the Future Baseline and about 40–67°F for Alternative 2 for the full simulation period (refer to Appendix 4C, Table C6-Temp-8). Modeled monthly average temperatures for Alternative 2 are about 1–2°F lower in June through September compared to the Future Baseline. Temperature reductions at the confluence with the Middle Yuba River exhibit a similar seasonal pattern, with modeled monthly average temperatures in June through September being about 1°F lower with operation of Alternative 2 compared to the Future Baseline (refer to Appendix 4C, Table C6-Temp-9). Modeled monthly average temperatures at the confluence range from about 40–70°F for the Future Baseline and 40–69°F for Alternative 2 for the full simulation period.

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-8, operation of Alternative 2 would not cause substantial, if any, differences in Oregon Creek dissolved oxygen, turbidity, TSS, copper, iron, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 2 would not cause exceedance of an Oregon Creek water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the creek. Furthermore, operation of Alternative 2 would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the creek.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Oregon Creek. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Oregon Creek. Therefore, impacts on Oregon Creek water quality from operation of Alternative 2 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt2-9: Impacts on the Middle Yuba River Water Quality from Operation of Alternative 2

Modeled Middle Yuba River flow rates with operation of Alternative 2 and differences from the Future Baseline would be higher than those described in YRDP Impact WQ-FPP-9 for the YRDP Relicensing Project (future) compared to the Future Baseline in all months (refer to Appendix 4C, Table C6-Flow-8). Modeled monthly average Middle Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 2 compared to the Future Baseline. The increases are greatest, on a percent basis, in April, May, and June. In these months, modeled flow rates average 64–114 cfs for the Future Baseline and 276–483 cfs for Alternative 2. Modeled flow rates in July through March average 31–201 cfs for the Future Baseline and 44–441 cfs for Alternative 2, depending on month.

The modeled river temperatures with operation of Alternative 2 and differences from the Future Baseline are lower than those described for the YRDP Relicensing Project (future) compared to the Future Baseline due to higher river flow rates. Modeled monthly average temperatures below Our House Diversion Dam with Alternative 2 are nearly the same as those for the Future Baseline with differences ranging from 0.0–0.1°F (refer to Appendix 4C, Table C6-Temp-10). Modeled monthly average temperatures below the dam range from about 40–71°F for both scenarios for the full simulation period (refer to Appendix 4C, Table C6-Temp-10). Because of the higher flow rates, temperatures would be lower further downstream of the dam. Downstream of the confluence with Oregon Creek, modeled monthly average temperatures are up to about 2°F lower compared to the Future Baseline (Appendix 4C, Table C6-Temp-11). Upstream of the confluence with the North Yuba River modeled monthly average temperatures are also up to about 2°F lower compared to the Future Baseline (Appendix 4C, Table C6-Temp-12).

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-9, operation of Alternative 2 would not cause substantial, if any, differences in Middle Yuba River dissolved oxygen, turbidity, TSS, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 2 would not cause exceedance of a Middle Yuba River water quality objective/criterion by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the Middle Yuba River. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Middle Yuba River. Therefore, impacts on the Middle Yuba River water quality from operation of Alternative 2 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt2-10: Impacts on Upper Yuba River Water Quality from Operation of Alternative 2

Modeled upper Yuba River flow rates with operation of Alternative 2 and differences from the Future Baseline would be higher than those described in YRDP Impact WQ-FPP-10 for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average upper Yuba River flow rates are higher year-round over the entire simulation period with operation of Alternative 2 compared to the Future Baseline (refer to Appendix 4C, Table C6-Flow-11). Modeled flow rates below the Middle Yuba River confluence average 46–1,084 cfs for the Future Baseline and 76–1,167 cfs for Alternative 2, depending on month.

The modeled river temperatures with operation of Alternative 2 and differences from the Future Baseline would be similar to those described for the YRDP Relicensing Project (future) compared to the Future Baseline. Modeled monthly average temperatures below the Middle Yuba River confluence range from about 40–73°F for the Future Baseline and 40–66°F for Alternative 2 for the full simulation period (refer to Appendix 4C, Table C6-Temp-13). Modeled monthly average temperatures for Alternative 2 are about 5–8°F lower in the summer compared to the Future Baseline. Temperature differences in the upper Yuba River at Colgate Powerhouse are smaller. Modeled monthly average temperatures at this location range from about 39–73°F for the Future Baseline and 39–71°F for Alternative 2 for the full simulation period (refer to Appendix 4C, Table C6-Temp-14). Modeled monthly average temperatures for Alternative 2 are about 1–4°F lower in the summer compared to the Future Baseline.

Therefore, for the same reasons provided in YRDP Impact WQ-FPP-10, operation of Alternative 2 would not cause substantial, if any, differences in upper Yuba River dissolved oxygen, turbidity, TSS, mercury, chromium, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. As such, operation of Alternative 2 would not cause exceedance of an upper Yuba River water quality objective/criterion

by frequency, magnitude or geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the river. Furthermore, operation of Alternative 2 would not cause additional water quality degradation for the CWA Section 303(d)-listed constituents in the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the upper Yuba River. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the upper Yuba River. Therefore, impacts on the upper Yuba River water quality from operation of Alternative 2 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt2-11: Impacts on Lower Yuba River Water Quality from Operation of Alternative 2

Modeled lower Yuba River flow rates with operation of Alternative 2 and differences from the Future Baseline are substantially higher in some months than those described in YRDP Impact WQ-FPP-11 for the YRDP Relicensing Project (future). Modeled monthly average lower Yuba River flow rates with operation of Alternative 2 are higher particularly in November through May, and lower in July through September over the entire simulation period and across all water year types compared to the Future Baseline with differences sometimes being greater than 10 percent (refer to Appendix 4C, Tables C6-Flow-1 through C6-Flow-4).

River temperatures with operation of Alternative 2 are similar or slightly cooler during November through April, and warmer in May through October over the entire simulation period and across all water year types compared to the Future Baseline. Modeled monthly average temperatures are about 0–1°F lower in November through April and about 3–5°F warmer in June through August compared to the Future Baseline (refer to Appendix 4C, Tables C6-Temp-1 through C6-Temp-5).

As discussed in YRDP Impact WQ-FAlt2-6, operation of the YRDP Relicensing Project would not cause substantial, if any, differences in the temperature and dissolved oxygen profiles, phosphorus and nitrogen cycling, methylmercury formation, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, TSS and turbidity, organic carbon) in Englebright Reservoir compared to the Future Baseline. Furthermore, operations would not affect the level that water is released from the reservoir. Therefore, the quality of water released into the lower Yuba River would be similar to the water quality under the Future Baseline.

While river flow rates would differ from the Future Baseline, sometimes by more than 10 percent, operation of Alternative 2 would not cause substantial, if any, differences in lower Yuba River dissolved oxygen, turbidity, TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, pesticides, trace metals, organic carbon) compared to the Future Baseline. River flows could maintain dissolved oxygen levels near saturation. The higher flow rates would primarily occur in months with already comparatively higher flow rates, therefore,

little to no difference in TSS, mercury, copper, or other water quality constituents (e.g., salinity-related parameters, nutrients, trace metals, organic carbon) is expected. As such, operation of Alternative 2 would not cause lower Yuba River water quality to differ by frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, or substantially degrade water quality with respect to the constituents of concern, and thus would not adversely affect any beneficial uses in the river.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Therefore, impacts on the lower Yuba River water quality from operation of Alternative 2 would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt2-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of Alternative 2

As discussed in YRDP Impact WQ-Alt2-12, Alternative 2 operations have the potential to affect the water quality of the lower Feather River through changes to Yuba River tributary inflows. Modeling results show higher Yuba River flow rates at Marysville in October through June, particularly during November, December, April, and May, and lower flow rates in July through September (Appendix 4C, Table C6-Flow-4). For the Future Baseline, modeled monthly average flow rates range from 544 cfs in October to 4,707 cfs in March. For Alternative 2, modeled monthly average flow rates range from 559 cfs in October to 4,685 cfs in March.

The lower Yuba River flow rates and the modeled differences are comparable to those described in YRDP Impact WQ-Alt2-12 for Alternative 2 compared to the Existing Condition. Therefore, for the same reasons provided in YRDP Impact WQ-Alt2-12, the changes in lower Yuba River flows with Alternative 2 would likely result in undetectable changes in the water quality of the lower Feather River, Sacramento River, and Delta water quality.

CEQA Conclusion

Based on the above analysis, operation of Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Feather River, Sacramento River, or Delta. Furthermore, operation of Alternative 2 would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Therefore, impacts on Feather River, Sacramento River, and Delta water quality from operation of the YRDP Relicensing Project would be **less than significant**. No CEQA mitigation is required.

YRDP Impact WQ-FAlt2-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Operations

Alternative 2 consists of water storage and diversion facilities located within and adjacent to Project Area reservoirs and rivers where water levels fluctuate. In addition, some recreational facilities are located adjacent to Project Area reservoirs and rivers.

Modeling results show substantial decreases in average New Bullards Bar Reservoir and Englebright Reservoir end-of-month storage and water surface elevations compared to the Future Baseline (refer to Appendix 4C, Tables C6-Reservoir-1 through C6-Reservoir-4). Modeling results also show that peak flow rates of Project Area rivers and creeks with Alternative 2 would be the same or very similar to those that occur under the Future Baseline (refer to Appendix 4C, Figures C6-Flow-1 through 65-Flow-48). Therefore, project facilities with Alternative 2 would not be at increased risk of inundation that would result in an increased risk of release of pollutants to Project Area waterbodies compared to the Future Baseline.

Furthermore, Alternative 2 operations would not result in an increased risk of release of pollutants downstream of project facilities. Modeling results show that peak lower Yuba River flow rates with operation of Alternative 2 are similar to the Future Baseline over the entire simulation period (refer to Appendix 4C, Figures C6-Flow-1 through C6-Flow-12).

Finally, as discussed in YRDP Impact WQ-FAlt2-12, operation of Alternative 2 would result in small (5% or less) changes in lower Feather River flows downstream of the confluence with the lower Yuba River when river flow rates are highest, and smaller (1% or less) changes in Sacramento River flow rates. Consequently, Alternative 2 would not result in an increased risk of release of pollutants downstream of the lower Yuba River.

CEQA Conclusion

Based on the above discussion, Alternative 2 would have a **less-than-significant impact** on the risk of release of pollutants due to project inundation in flood hazard zones.

Narrows Impact WQ-FAlt2-1: Impacts on Surface Water Quality from Operation of the Narrows Project.

Yuba Water proposes to continue to operate the Narrows Project under Alternative 2 in substantial conformance with existing operations, with minor modifications. The minor operations-related modifications that could affect water quality include operating the project to assist the YRDP with meeting instream flow requirements in the lower Yuba River at Smartsville and maintaining a minimum water surface elevation in Englebright Reservoir. However, the effects of these operations on Englebright Reservoir and lower Yuba River compared to the Future Baseline would not be beyond those described for YRDP Impact WQ-FAlt2-6 and YRDP Impact WQ-FAlt2-11, respectively. Any minimal effects of the Narrows Project operations under Alternative 2 on lower Yuba River water quality would have little to no effect on the water quality of the Feather River, Sacramento River, and Delta, given modeling results that show hydrologic operations on the Yuba River have little effect on downstream hydrology, as discussed in YRDP Impact WQ-FAlt2-12.

CEQA Conclusion

Based on the above analysis, operation of the Narrows Project under Alternative 2 would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the lower Yuba River, lower Feather River, Sacramento River, or Delta. Furthermore, operation of the Narrows Relicensing Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to these waterbodies. Finally, operation of the Narrows Project under Alternative 2 would not result in an increased risk of release of pollutants to Project Area waterbodies or conflict with or obstruct implementation of a water quality control plan. Therefore, impacts on Yuba River, Feather River, Sacramento River, and Delta water quality from operation of the Narrows Project under Alternative 2 would be **less than significant**. No CEQA mitigation is required.

8.5.7 No Project Alternative compared to the Existing Condition

Under the scenario where no FERC license is accepted for either the YRDP or the Narrows Project, no construction or modification to YRDP facilities or operations would occur under the No Project Alternative. Therefore, there would be no direct alteration of an existing drainage pattern and no construction-related effects on surface water quality in the Project Area.

As described in Chapter 3, Section 3.5, "No Project Alternative," generally river flow and reservoir storage conditions would be similar to those under the Existing Condition, with a few exceptions. The No Project Alternative would result in less fluctuations of river inflows into Englebright Reservoir, therefore less fluctuations in reservoir water surface elevations relative to the Existing Condition. Inflow differences would be modulated in Englebright Reservoir such that there would be no changes in lower Yuba River flows. As described in Section 8.5.1 for the Proposed Projects, small differences in river flow rates and reservoir storage fluctuations would not result in substantial, if any, differences in the surface water quality of Project Area waterbodies compared to the Existing Condition. As such, the No Project Alternative also would not change levels of CWA Section 303(d)-listed constituents by magnitude and duration that would make conditions in an impaired waterbody worse.

As described in Chapter 3, the lost revenue from hydropower sales could adversely affect Yuba Water's ability to maintain recreational facilities, restoration projects, and routine maintenance that currently occurs under the Existing Condition. The degree to which this could occur is somewhat speculative, but could mean that recreational facilities and access roads would fall into disrepair. The extent to which this could have adverse effects on surface water quality would depend on proximity of the facilities to Project Area waterbodies. Roads and trails not properly maintained could experience washouts during heavy rainfall events, which could contribute additional temporary elevated suspended sediment to adjacent waterbodies compared to the Existing Condition. Similarly, recreation sites, such as campgrounds and day use areas, that are not properly maintained could contribute to elevated suspended sediment levels in stormwater runoff, which could result in additional temporary elevated suspended sediment levels in adjacent waterbodies compared to levels under the Existing Condition. Therefore, there could be substantial

alteration of the existing drainage patterns at some YRDP sites that could result in substantial erosion or siltation. Elevated suspended sediment in adjacent Project Area waterbodies would be localized, with sediment settling out in the vicinity of the discharge and no widespread elevated suspended sediment conditions in areas downstream. Therefore, the potential additional erosion is not expected to provide substantial additional sources of polluted runoff to Project Area waterbodies such that beneficial uses would be adversely affected.

O&M activities to operate the YRDP and Narrows Project for flood control and water supply purposes would continue to occur as they do now under the Existing Condition. This includes the periodic removal and/or flushing of sediment from the impoundments behind the Our House Diversion Dam on the Middle Yuba River and Log Cabin Diversion Dam on Oregon Creek. There have been three sediment passage events at Our House Diversion Dam, two in 2017 and one in 2019 and none at Log Cabin Diversion Dam (Yuba Water 2018). Sediment removal events occurred at Log Cabin Diversion Dam in 1972, 1997, 2014, and 2017. Sediment removal events at Our House Diversion Dam occurred in 1986, 1992, 1997, 2006, and 2017. The frequency of sediment flushing and removal events would likely occur at a similar frequency under the No Project Alternative. Therefore, substantial differences in water quality in Project Area waterbodies would not occur from this O&M activity.

Other O&M activities that involve work at YRDP water conveyance facilities would likely result in little to no change in the water quality of Project waterbodies, because those activities would be similar in nature, timing, and frequency to that occurring under the Existing Condition. Maintenance of the YRDP does not involve alteration of existing drainage patterns.

Construction, operations, and maintenance activities under the scenario in which a FERC license is accepted for the YRDP but not the Narrow Project would be similar that which would occur with the Proposed Projects (refer to Chapter 3, Section 3.5, No Project Alternative). Because construction, operations, and maintenance activities for this scenario would be similar to the Proposed Projects, the effects to water quality of Project Area waterbodies from these activities would be similar to that described in Section 8.5.1 for the Proposed Projects.

Therefore, based on the above analysis, the No Project Alternative would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of Project Area waterbodies. The No Project Alternative could result in alteration of the existing drainage pattern of a site or area that would result in substantial erosion or siltation on- or off-site, but is not expected to create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies. Finally, the No Project Alternative would not result in an increased risk of release of pollutants to Project Area waterbodies or conflict with or obstruct implementation of a water quality control plan. Therefore, the following impacts on surface water quality from the No Project Alternative would be **less than significant**.

- YRDP Impact WQ-NP-1: Impacts on Surface Water Quality from Modification of Power Generation- and Water Conveyance-Related Facilities for the YRDP Relicensing Project.
- YRDP Impact WQ-NP-2: Impacts on Surface Water Quality from Implementation of the YRDP Recreation Facilities Plan.

- YRDP Impact WQ-NP-3: Impacts on Surface Water Quality from Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan.
- YRDP Impact WQ-NP-4: Impacts on Surface Water Quality from Other YRDP Implementation Plans.
- YRDP Impact WQ-NP-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-6: Impacts on Englebright Reservoir Water Quality from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-7: Impacts on North Yuba River Water Quality below New Bullards Bar Dam from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-8: Impacts on Oregon Creek Water Quality from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-9: Impacts on the Middle Yuba River Water Quality from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-10: Impacts on Upper Yuba River Water Quality from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-11: Impacts on Lower Yuba River Water Quality from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-12: Impacts on the Lower Feather River, Sacramento River, and Delta from Operation of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-13: Impacts on Surface Water Quality from Other Operations and Maintenance of the YRDP Relicensing Project.
- YRDP Impact WQ-NP-14: Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones from YRDP Relicensing Project Operations.
- YRDP Impact WQ-NP-15: Consistency with Water Quality Control Plans.
- Narrows Impact WQ-NP-1: Impacts on Surface Water Quality from Operation of the Narrows Relicensing Project.

8.6 Cumulative Impact Assessment

The cumulative impact assessment for surface water quality considers past, present, and reasonably foreseeable future projects in the Project Area in combination with the effects of the Project Projects, Alternative 1, or Alternative 2. Present and reasonably foreseeable future projects are listed in Chapter 4, Table 4.9-1, "Cumulative Project List." The geographic scope for the cumulative impact assessment is the same as that for the project-level assessment in Section 8.5, which includes waterbodies in the Yuba River watershed downstream to the Delta.

If a cumulative water quality condition is determined to be significant relative to the Existing Condition, then further assessment is conducted to determine whether the individual contribution of the Proposed Projects or alternatives to the significant cumulative condition would be

"cumulatively considerable," thus significant. Table 8.6-1 presents the comparisons evaluated to identify cumulatively significant impacts.

Table 8.6-1. Summary of Cumulative Scenario Comparisons for Project and Alternative Impact Determinations.

Scenario Name	Basis of Comparison
Cumulative Condition (Proposed Projects)	Existing Condition
Cumulative Condition (Alternative 1)*	Existing Condition
Cumulative Condition (Alternative 2)*	Existing Condition

*Includes YB/DS with FERC 4(e) conditions.

The discussion of cumulative impacts is organized into three separate sections: (1) upper Yuba River watershed (i.e., waterbodies upstream of Englebright Dam); (2) lower Yuba River (i.e., downstream of Englebright Dam); and (3) areas downstream of the lower Yuba River. This organization corresponds to the grouping of cumulative projects in Table 4.9-1.

8.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

8.6.1.1 Upper Yuba River Watershed

Water in the Project Area reservoirs, rivers, and creeks in the upper Yuba River watershed is of generally good quality and meets Basin Plan objectives for the majority of constituents in the majority of locations (refer to Section 8.2.2). However, several waterbodies are CWA Section 303(d)-listed as impaired due to high levels of specific constituents (refer to Section 8.2.2). The North Yuba River, upper Yuba River (confluence of North and Middle Yuba Rivers to Englebright Reservoir), New Bullards Bar Reservoir, and Englebright Reservoir are listed as impaired for mercury. The upper Yuba River is also listed for chromium impairments. Oregon Creek is listed for copper and iron impairments.

Regulatory efforts are underway to address mercury impairments in Project Area waterbodies, such as restrictions on suction dredging and continued cleanup actions on mine drainage in the upper watershed. The SWRCB is developing a statewide mercury control program for reservoirs and a Central Valley mercury control program for rivers. Although positive mercury reduction efforts are likely to continue into the foreseeable future, a key challenge surrounds the pool of mercury deposited in the watershed that cannot be readily or rapidly reduced and serves as a source for continued methylation and bioaccumulation by biota. Also, atmospheric deposition of mercury is expected to continue in the future. Thus, mercury-related impairments are expected to part of the cumulative water quality condition in Project Area waterbodies, but not exacerbated by the cumulative projects, including the Proposed Projects, as explained further below. As discussed in the impact analyses in Section 8.5.1, the degree to which Project Area waterbodies are actually impaired for copper, iron, and chromium is uncertain based on the data used for the CWA Section 303(d) listings and current science on effects thresholds.

The future cumulative water quality condition of waterbodies within the upper Yuba River watershed with the cumulative projects listed in Table 4.9-1 is expected to be similar to the Existing Condition and waterbody impairments are not expected to be measurably worse, as

explained below. Much of the upper Yuba River watershed is rural and forested and these land uses are expected to continue into the foreseeable future. Thus, no new, sustained point source contributions of contaminants are anticipated that would result in a worsening of water quality in upper Yuba River watershed waterbodies compared to the Existing Condition.

The cumulative projects listed in Table 4.9-1 occurring in the upper Yuba River watershed consist of forest restoration and fuels reduction, as well as the YB/DS FERC relicensing projects, which involve facility construction, modifications to operations related to minimum flows and ramping rates, maintenance activities, recreation facility improvements, and other implementation plans. The forest restoration and fuels reductions projects may result in ground disturbances, resulting in some risk of water quality degradation or exceedance of water quality standards, however, those effects would be temporary and limited to the immediate vicinity of the work area. The YB/DS FERC relicensing projects also could have some limited, temporary effects on water quality from construction activities. However, construction-related BMPs would be expected to be implemented to minimize effects, and the projects are subject to a CWA Section 401 WQC. YB/DS operations-related changes in waterbody flow rates would not be expected to result in substantial, if any, changes in water quality given that the source waters would be the same, only the quantity of water in the project reservoirs and downstream rivers and creeks would differ somewhat on a seasonal basis.

Yuba Water's ARC Spillway also is a cumulative project listed in Table 4.9-1, which would be implemented at New Bullards Bar Dam. Yuba Water previously identified and adopted mitigation measures to reduce the water quality impacts associated with ARC Spillway operations to a less-than-significant level. As explained in Chapter 2, these previously adopted mitigation measures for ARC Spillway operations have been incorporated into the YRDP Relicensing Project and will continue to apply to ARC Spillway operations under the YRDP Relicensing Project. Furthermore, the ARC Spillway project includes mitigation measures to address potential construction-related impacts to water quality. The adopted mitigation measures will ensure that the water quality impacts from ARC Spillway project will be mitigated to a less-than-significant level.

As described for the Proposed Projects in Section 8.5.1, YRDP Impact WQ-PP-1, construction associated with YRDP water conveyance facilities would occur at separate locations adjacent to different Project Area waterbodies and would be of short duration (i.e., 6 months or less). Construction activities associated with the implementation plans, including the *Recreation Facilities Plan*, similarly would be of relatively short duration (i.e., about 1 year or less) and at separate locations, as described in YRDP Impacts WQ-PP-2 and WQ-PP-4. Furthermore, the YRDP includes implementation plans for hazardous materials management, erosion and sediment control, and vegetation management that would reduce the potential discharge of pollutants from construction activities to surface waterbodies in the Project Area. The SWPPPs that would be required by the SWRCB's Construction Stormwater General Permit, where there would be a disturbance of one acre or more, would require application of construction BMPs to minimize and control discharges of pollutants to surface waters. Finally, the YRDP would be subject to requirements in the SWRCB-issued CWA Section 401 WQC. With implementation of the YRDP Relicensing Project control measures and BMPs, any construction-related effect of the YRDP Relicensing Project on surface water quality would be of small magnitude, geographically limited, and temporary in nature. YRDP construction activities would not combine with the cumulative projects in Table 4.9-1 to cause exceedance of a water quality objective/criterion by frequency,

magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of upper Yuba River watershed waterbodies. Because no new facilities are proposed for the Narrows Relicensing Project, there is no potential for cumulative impacts on water quality from construction activities related to this project.

Operation of the Project Projects also would negligibly affect cumulative water quality conditions of Project Area waterbodies in the upper Yuba River watershed. Differences in modeled reservoir storage and river/creek flow rates and temperatures for the cumulative condition with the Proposed Projects are very similar to or identical to those described for the Proposed Projects relative to the Existing Condition in Section 8.5.1 (refer to Appendix 4B, "Summary of Changes in Modeled Riverine Flows and Water Temperatures" and Appendix 4C, "Hydrologic and Water Temperature Data Products"). Therefore, for the same reasons provided in Section 8.5.1, YRDP Impact WQ-PP-5 through YRDP WQ-PP-10 and Narrows Impact WQ-PP-1, water quality of upper Yuba River watershed Project Area waterbodies would be negligibly affected by operation of the Proposed Projects. Operations for some projects listed in Table 4.9-1 could result in modifications to river flow regimes and reservoir storage compared to the Existing Condition, such as the YB/DS FERC relicensing projects in the upper Yuba River watershed. The waterbodies that would be affected by operation of Proposed Projects do not overlap with the YB/DS FERC relicensing waterbodies and these projects would not change sources of contaminants within the watershed, which are not significant given that the watershed is largely undeveloped. Therefore, the cumulative effect of operation of the Proposed Projects combined with the projects listed in Table 4.9-1 in the upper Yuba River watershed would not result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies in the upper Yuba River watershed.

Implementation of the YRDP *Recreation Facilities Plan*, *Sediment Management Plan*, and other implementation plans, along with routine O&M also would have minimal effect on water quality constituents in Project Area waterbodies in the upper Yuba River watershed, as described in YRDP Impacts WQ-PP-2 through WQ-PP-4, and WQ-PP-13. While the implementation plan activities and routine O&M would overlap in time with project operations and the cumulative projects listed in Table 4.9-1, the potential effects to water quality would not combine with these other project components to result in cumulative conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies in the upper Yuba River watershed due to the geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

Based on the above analysis, the cumulative condition, including the Proposed Projects, would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Project Area waterbodies in the upper Yuba River watershed. Furthermore, the cumulative condition, including the Proposed Projects, would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that

would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies in the upper Yuba River watershed. Where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. Therefore, under the Cumulative Condition, including the Proposed Projects, the cumulative impact on water quality of Project Area waterbodies in the upper Yuba River watershed would be less than significant.

8.6.1.2 Lower Yuba River

Lower Yuba River water quality is of generally good quality and meets Basin Plan objectives for the majority of constituents (refer to Section 8.2.2). However, the lower Yuba River is CWA Section 303(d)-listed as impaired related to elevated concentrations of mercury and copper. As described above for the upper Yuba River watershed, regulatory efforts are underway to address mercury impairments, while there is some uncertainty regarding the degree to which the river has actual copper-related impairments when all relevant data and current science on effects thresholds are considered.

The future cumulative water quality condition of the lower Yuba River with the cumulative projects listed in Table 4.9-1 is expected to be generally similar to the Existing Condition. As described in Section 8.6.1.1, water quality of upper Yuba River watershed waterbodies is expected to be similar to the Existing Condition with the cumulative projects, including the Proposed Projects. Therefore, the water released into the lower Yuba River from Englebright Reservoir is expected to be similar to the Existing Condition.

Cumulative projects listed in Table 4.9-1 that could affect the lower Yuba River involve water supply management and transfer, minimum instream flows for fish habitat improvements, habitat restoration, and levee and flood protection improvements, among others. To the extent that projects in the vicinity of the lower Yuba River involve construction, those activities would be expected to have a limited effect on water quality due to implementation of construction BMPs, and effects would be temporary. Water supply and transfer projects could result in seasonal and water year-type differences in river flow rates, but water quality of the waterbodies downstream of the lower Yuba River would be expected to be similar to the Existing Condition given that the source waters would be the same, only the quantity of water would differ seasonally.

YRDP Relicensing Project construction activities would be limited to areas upstream of Englebright Reservoir. Given the construction-related BMPs that would be implemented and the volume of potential discharges relative to upstream river flow rates and reservoir volumes, project construction in the upper Yuba River watershed would not affect cumulative lower Yuba River water quality conditions. Because no new facilities are proposed for the Narrows Relicensing Project, there is no potential for cumulative impacts on water quality from construction activities related to this project.

Operation of the Project Projects also would negligibly affect cumulative water quality conditions in the lower Yuba River. Differences in modeled river flow rates and temperatures for the cumulative condition with the Proposed Projects are very similar to or identical to those described for the Proposed Projects relative to the Existing Condition in Section 8.5.1 (refer to Appendix 4B and Appendix 4C for modeling results). Therefore, for the same reasons provided in Section 8.5.1,

YRDP Impact WQ-PP-11 and Narrows Impact WQ-PP-1 regarding water operations-related impacts, lower Yuba River water quality would be negligibly affected by operation of the Proposed Projects. Similarly, as discussed above, lower Yuba River water quality with the cumulative projects listed in Table 4.9-1 is expected to be similar to the Existing Condition. Therefore, the cumulative effect of operation of the Proposed Projects combined with the projects listed in Table 4.9-1 would not result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the lower Yuba River.

Proposed Project implementation plan activities and routine O&M would overlap in time with project operations and the cumulative projects listed in Table 4.9-1, however, the potential for these activities to affect lower Yuba River water quality would be limited, as these activities would occur primarily upstream of Englebright Dam. Therefore, the potential effects to water quality would not combine with these other project components to result in cumulative conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the lower Yuba river due to the geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

Based on the above analysis, the cumulative condition, including the Proposed Projects, would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade lower Yuba River water quality. Furthermore, the cumulative condition, including the Proposed Projects, would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. Therefore, under the Cumulative Condition, including the Proposed Projects, the cumulative impact on water quality of the lower Yuba River would be less than significant.

8.6.1.3 Areas Downstream of the Lower Yuba River

Feather River, Sacramento River, and Delta waters are generally of good quality and suitable to support designated beneficial uses (refer to Section 8.2.3). However, these waterbodies are CWA Section 303(d)-listed for certain constituent impairments (refer to Section 8.2.3).

Cumulative projects listed in Table 4.9-1 affecting areas downstream of the lower Yuba River consist primarily of FERC relicensing, water storage and conveyance projects, and the ongoing update to the Bay-Delta Plan. Some of these projects could result in seasonal and water year-type differences in tributary river flow rates, which could affect water quality of these downstream waterbodies, depending on the seasonal timing and flow rate changes.

On the Feather River and Sacramento River, the FERC relicensing projects and coordinated operations of the SWP and CVP could affect river flow rates, but river water quality would be expected to be similar to the Existing Condition given that the source waters would be the same, only the quantity of water may differ seasonally.

FERC relicensing projects, coordinated long-term operation of the CVP and SWP, water transfers, the Sites Reservoir Project, the Bay-Delta Update (and associated proposed Healthy Rivers and Landscapes Program), and the Delta Conveyance Project could alter Delta inflows relative to the Existing Condition, which could alter water quality conditions, particularly for salinity-related constituents (e.g., electrical conductivity, chloride, bromide). Generally, these projects would be required to be operated or implemented to ensure compliance with Bay-Delta Plan water quality objectives for protection of beneficial uses, including agricultural, municipal and industrial, and fish and wildlife beneficial uses. Furthermore, projects involving construction would include BMPs and other measures to minimize or mitigate impacts on water quality.

Cumulative Delta water quality conditions will also be affected by urban development and agricultural land uses in the watershed and associated nonpoint source discharges, climate change effects on sea level rise and associated salinity intrusion, and changes in water quality regulations (e.g., completion of TMDLs, adoption of new or more restrictive criteria/objectives). The associated effects on Delta water quality will vary. Urban development may produce increased constituent loadings to Delta waters through increased urban stormwater runoff and increased municipal wastewater discharges. Sea level rise is anticipated to cause salinity increases in the western and southern Delta. Conversely, water quality regulations, such as NPDES permit requirements imposed on urban stormwater runoff and municipal wastewater dischargers, completion of TMDLs to lessen or eliminate existing beneficial use impairments through improved water quality, and new or more restrictive water quality objectives adopted to reflect updated science regarding effects on beneficial uses generally would result in improvements in Delta water quality.

The cumulative effects of the cumulative projects listed Table 4.9-1, the Proposed Projects, future development, and regulatory actions on Delta water quality are uncertain given the scope and complexity of how these factors interact to affect Delta water quality. Given the uncertainty, this analysis concludes that cumulative effect of these projects and factors could result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the Delta.

The cumulative condition, including the Proposed Projects, is not expected to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Delta. Furthermore, where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. However, based on the above analysis, the cumulative condition, including the Proposed Projects, could substantially degrade surface water quality in the Delta. Therefore,

under the cumulative condition, including the Proposed Projects, the cumulative impact on Delta water quality is considered significant.

YRDP Relicensing Project construction activities would be limited to areas upstream of Englebright Dam. Because no new facilities are proposed for the Narrows Relicensing Project there would be no cumulative impacts on Delta water quality resulting from construction activities related to this project. Furthermore, based on analysis presented in Section 8.5.1, YRDP Impact WQ-PP-12, operation of the Proposed Projects would not result in detectable changes in Feather River flows downstream of the Yuba River, the Sacramento River downstream of the Feather River, or the Delta compared to the Existing Condition. Therefore, the Proposed Projects' incremental contribution to the cumulative impact on Feather River, Sacramento River, and Delta water quality would not be cumulatively considerable.

8.6.1.4 Cumulative Impact Determination

YRDP Cumulative Impact WQ-PP-1. Cumulative Impacts on Surface Water Quality from Construction, Operation, and Maintenance of the YRDP
Based on the above discussion, the cumulative water quality condition, including the YRDP Relicensing Project, in Project Area waterbodies within the upper Yuba River watershed, lower Yuba River, the Feather River, and Sacramento River would be less than significant. However, the cumulative water quality condition in the Delta, including the YRDP Relicensing Project, could be significant. The YRDP Relicensing Project contribution to the significant cumulative water quality condition in the Delta would not be cumulatively considerable. As such the YRDP Relicensing Project would result in a **less than significant cumulative impact** on water quality.

Narrows Cumulative Impact WQ-PP-1. Cumulative Impacts on Surface Water Quality from Operation and Maintenance of the Narrows Project
Based on the above discussion, the cumulative water quality condition, including the Narrows Relicensing Project, in Project Area waterbodies downstream of the project (i.e., the lower Yuba River, the Feather River, and Sacramento River) would be less than significant. However, the cumulative water quality condition in the Delta, including the Narrows Relicensing Project, could be significant. The Narrows Relicensing Project contribution to the significant cumulative water quality condition in the Delta would not be cumulatively considerable. As such the Narrows Relicensing Project would result in a **less than significant cumulative impact** on water quality.

8.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

8.6.2.1 Upper Yuba River Watershed

The future cumulative water quality conditions in Project Area reservoirs, rivers, and creeks in the upper Yuba River watershed considering past, present, and reasonably foreseeable projects listed in Table 4.9-1, with Alternative 1, would be similar to the cumulative water quality conditions that would occur with the Proposed Projects, as described in Section 8.6.1.1. The primary reason for cumulative water quality conditions with Alternative 1 being similar to cumulative conditions with the Proposed Projects is that the mechanisms by which the projects could affect water quality in

upper Yuba River watershed waterbodies would be the same. There could be some differences in the YB/DS reservoirs and waterbodies downstream of these reservoirs, as explained below.

Alternative 1 includes a contribution of 15,600 ac-ft of water from the YB/DS projects that would be provided under new FERC licenses for those projects. As described in YRDP Indirect Impact WQ-Alt1-1, operations under Alternative 1 could result in lower YB/DS reservoir storage in affected reservoirs and modified flow rates in the rivers and creeks downstream of the YB/DS reservoirs. Differences in water quality constituent levels are not anticipated given that the watershed inputs to the reservoirs and inflow quality would be the same as under the Existing Condition. There could be some minor differences in downstream river and creek TSS and turbidity, but differences in other water quality constituent levels are not anticipated, given that the watershed inputs to the rivers and creeks would be the same as under the Existing Condition.

For the same reasons provided for the Proposed Projects, Alternative 1 construction activities for the YRDP would not combine with the cumulative projects in Table 4.9-1 to cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of upper Yuba River watershed waterbodies. Because no new facilities are proposed for the Narrows Project under Alternative 1, there is no potential for cumulative impacts on water quality from construction activities related to this project.

Operation of Alternative 1 also would negligibly affect cumulative water quality conditions of Project Area waterbodies in the upper Yuba River watershed. Differences in modeled reservoir storage and river/creek flow rates and temperatures for the cumulative condition with Alternative 1 are very similar to or identical to those described for Alternative 1 relative to the Existing Condition in Section 8.5.3 (refer to Appendix 4B and Appendix 4C for modeling results). Therefore, for the same reasons provided in Section 8.5.3, YRDP Impact WQ-Alt1-5 through YRDP WQ-Alt1-10 and Narrows Impact WQ-Alt1-1,water quality of upper Yuba River watershed Project Area waterbodies would be negligibly affected by operations-related effects on reservoir storage and river/creek flow rates under Alternative 1.

Alternative 1 would include the same non-flow components as the Proposed Projects, including implementation plans, and routine O&M activities. Therefore, for the same reasons provided in Section 8.6.1.1 for the Proposed Projects, the cumulative projects listed in Table 4.9-1 would not combine with these other project components to result in cumulative conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of Project Area waterbodies in the upper Yuba River watershed due to the geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

Therefore, the cumulative condition, including Alternative 1, would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in Project Area waterbodies in the upper Yuba River watershed. Furthermore, the cumulative condition, including Alternative 1, would not substantially alter the existing drainage

pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to Project Area waterbodies in the upper Yuba River watershed. Where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. Therefore, under the cumulative condition, including Alternative 1, the cumulative impact on water quality of Project Area waterbodies in the upper Yuba River watershed would be less than significant.

8.6.2.2 Lower Yuba River

The future cumulative water quality conditions in the lower Yuba River considering past, present, and reasonably foreseeable projects listed in Table 4.9-1, with Alternative 1, would be similar to the cumulative water quality conditions that would occur with the Proposed Projects, described in Section 8.6.1.1. The primary reason for cumulative water quality conditions with Alternative 1 being similar to cumulative conditions with the Proposed Projects is that the mechanisms by which the projects could affect water quality in the lower Yuba River would be the same.

YRDP Relicensing Project construction activities would be limited to areas upstream of Englebright Reservoir. Given the construction-related BMPs that would be implemented and the volume of potential discharges relative to upstream river flow rates and reservoir volumes, project construction in the upper Yuba River watershed would not affect cumulative lower Yuba River water quality conditions. Because no new facilities are proposed for the Narrows Relicensing Project, there is no potential for cumulative impacts on water quality from construction activities related to this project.

Operation of Alternative 1 also would negligibly affect cumulative water quality conditions in the lower Yuba River. Differences in modeled river flow rates and temperatures for the cumulative condition with Alternative 1 are very similar to or identical to those described for Alternative 1 relative to the Existing Condition in Section 8.5.3 (refer to Appendix 4B and Appendix 4C for modeling results). Therefore, for the same reasons as provided in Section 8.5.3, YRDP Impact WQ-Alt1-11 and Narrows Impact WQ-Alt1-1 regarding water operations-related impacts, lower Yuba River water quality would be negligibly affected by operation of Alternative 1. Similarly, as discussed above, lower Yuba River water quality with the cumulative projects listed in Table 4.9-1 is expected to be similar to the Existing Condition. Therefore, the cumulative effect of operation of Alternative 1 combined with the projects listed in Table 4.9-1 would not result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the lower Yuba River.

As discussed in Section 8.6.1.2 for the Proposed Projects, implementation plan activities and routine O&M with Alternative 1 would overlap in time with project operations and the cumulative projects listed in Table 4.9-1, however, the potential for these activities to affect lower Yuba River water quality would be limited, as these activities would occur primarily upstream of Englebright Dam. Therefore, the potential effects to water quality would not combine with these other project components to result in cumulative conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse

effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the lower Yuba river due to the geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

Therefore, the cumulative condition, including Alternative 1, would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade lower Yuba River water quality. Furthermore, the cumulative condition, including Alternative 1, would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. Therefore, under the cumulative condition, including Alternative 1, the cumulative impact on water quality of the lower Yuba River would be less than significant.

8.6.2.3 Areas Downstream of the Lower Yuba River

For same reasons described for the Proposed Projects in Section 8.6.1.3, Feather River and Sacramento River water quality under the cumulative condition is expected to be similar to the Existing Condition given that the source waters would be the same, only the quantity of water may differ seasonally. Cumulative Delta water quality conditions are uncertain given the scope and complexity of the factors that interact to affect Delta water quality. Given the uncertainty, the cumulative condition could result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the Delta.

As such, the cumulative condition, including Alternative 1, is not expected to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Delta. Furthermore, where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. However, based on the above analysis, the cumulative condition, including Alternative 1, could substantially degrade surface water quality in the Delta. Therefore, under the cumulative condition, including Alternative 1, the cumulative impact on Delta water quality is considered significant.

YRDP construction activities under Alternative 1 would be limited to areas upstream of Englebright Dam. Because no new facilities are proposed for the Narrows Project under Alternative 1 there would be no cumulative impacts on Delta water quality resulting from construction activities related to this alternative. Furthermore, based on analysis presented in Section 8.5.3, YRDP Impact WQ-Alt1-12, operation of Alternative 1 would not result in detectable changes in Feather River flows downstream of the Yuba River, the Sacramento River downstream

of the Feather River, or the Delta compared to the Existing Condition. Therefore, the incremental contribution of Alternative 1 to the cumulative impact on Feather River, Sacramento River, and Delta water quality would not be cumulatively considerable.

8.6.2.4 Cumulative Impact Determination

YRDP Cumulative Impact WQ-Alt1-1. Cumulative Impacts on Surface Water Quality from Construction, Operation, and Maintenance of the YRDP
Based on the above discussion, the cumulative water quality condition, including Alternative 1, in Project Area waterbodies within the upper Yuba River watershed, lower Yuba River, the Feather River, and Sacramento River would be less than significant. However, the cumulative water quality condition in the Delta, including Alternative 1, could be significant. The contribution of Alternative 1 to the significant cumulative water quality condition in the Delta would not be cumulatively considerable. As such Alternative 1 would result in a **less than significant** cumulative impact on water quality.

Narrows Cumulative Impact WQ-Alt1-1. Cumulative Impacts on Surface Water Quality from Operation and Maintenance of the Narrows Project
Based on the above discussion, the cumulative water quality condition, including Alternative 1, in Project Area waterbodies downstream of the Narrows Project (i.e., the lower Yuba River, the Feather River, and Sacramento River) would be less than significant. However, the cumulative water quality condition in the Delta, including Alternative 1, could be significant. The contribution of Alternative 1 to the significant cumulative water quality condition in the Delta would not be cumulatively considerable. As such Alternative 1 would result in a **less than significant** cumulative impact on water quality.

8.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

8.6.3.1 Upper Yuba River Watershed

For the same reasons provided for the Proposed Projects, Alternative 2 construction activities for the YRDP would not combine with the cumulative projects in Table 4.9-1 to cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of upper Yuba River watershed waterbodies. Because no new facilities are proposed for the Narrows Project under Alternative 2, there is no potential for cumulative impacts on water quality from construction activities related to this project.

Also, Alternative 2 would include the same non-flow components as the Proposed Projects, including implementation plans, and routine O&M activities. Therefore, for the same reasons provided in Section 8.6.1.1 for the Proposed Projects, the cumulative projects listed in Table 4.9-1 would not combine with these other project components to result in cumulative conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial

uses of Project Area waterbodies in the upper Yuba River watershed due to the geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

Operation of Alternative 2 involves implementation of the SWRCB's proposed update to the Bay-Delta Plan regarding providing specified unimpaired flows in the Yuba River watershed rivers and minimum end-of-September reservoir storage (refer to Chapter 3, Section 3.4 for additional information). The relevant future cumulative condition for this alternative is implementation of the Bay-Delta Plan update across the entire Sacramento River watershed, as analyzed by the SWRCB in its Draft Staff Report for the update (SWRCB 2023).

Operation of Alternative 2 has the potential to result in adverse cumulative water quality condition in New Bullards Bar Reservoir. Differences in modeled New Bullards Bar Reservoir storage for the cumulative condition with Alternative 2 are very similar to or identical to those described for Alternative 2 relative to the Existing Condition in Section 8.5.5, YRDP Impact WQ-Alt2-5 (refer to Appendix 4B and Appendix 4C for modeling results). Therefore, for the same reasons provided in Section 8.5.5, YRDP Impact WQ-Alt2-5, Alternative 2 would have a potentially significant impact to New Bullards Bar Reservoir water quality due to potential effects on reservoir temperature, nutrients, dissolved oxygen, and methylmercury, which could have adverse effects on beneficial uses.

Operation of Alternative 2 would negligibly affect cumulative water quality conditions of other Project Area waterbodies in the upper Yuba River watershed. Differences in modeled Englebright Reservoir storage and river/creek flow rates and temperatures for the cumulative condition with Alternative 2 are very similar to or identical to those described for Alternative 2 relative to the Existing Condition in Section 8.5.5 (refer to Appendix 4B and Appendix 4C for modeling results). Therefore, for the same reasons provided in Section 8.5.5, YRDP Impact WQ-Alt2-6 through YRDP WQ-Alt2-10 and Narrows Impact WQ-Alt1-1,water quality of other upper Yuba River watershed Project Area waterbodies would be negligibly affected by operations-related effects on reservoir storage and river/creek flow rates under Alternative 2.

As such, the cumulative condition, including Alternative 2, is not expected to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Delta. Furthermore, where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. However, based on the above analysis, the cumulative condition, including Alternative 2, could substantially degrade New Bullards Bar Reservoir water quality. Therefore, under the cumulative condition, including Alternative 2, the cumulative impact on New Bullards Bar Reservoir water quality is considered significant. YRDP operations under Alternative 2 would be responsible for these adverse water quality effects. Therefore, Alternative 2 would have a cumulatively considerable contribution to the potentially significant cumulative impact on New Bullards Bar Reservoir water quality.

The SWRCB similarly concluded that the proposed Bay-Delta Plan amendments, when combined with relevant projects and programs, would result in a potentially significant cumulative impact to water quality (SWRCB 2023, p. 7.23-49). Potential water quality impacts included increases in contaminant concentrations in waterbodies downstream of reservoirs, increased methylmercury production and increased harmful algal blooms in reservoirs (SWRCB 2023, pp. 7.23-49–7.23-50).

8.6.3.2 Lower Yuba River

The future cumulative water quality conditions in the lower Yuba River considering past, present, and reasonably foreseeable projects listed in Table 4.9-1 with Alternative 2 would be similar to the cumulative water quality conditions that would occur with the Proposed Projects, described in Section 8.6.1.1. The primary reason for cumulative water quality conditions with Alternative 2 being similar to cumulative conditions with the Proposed Projects is that the mechanisms by which the projects could affect water quality in the lower Yuba River would be the same.

YRDP Relicensing Project construction activities would be limited to areas upstream of Englebright Reservoir. Given the construction-related BMPs that would be implemented and the volume of potential discharges relative to upstream river flow rates and reservoir volumes, project construction in the upper Yuba River watershed would not affect cumulative lower Yuba River water quality conditions. Because no new facilities are proposed for the Narrows Relicensing Project, there is no potential for cumulative impacts on water quality from construction activities related to this project.

Operation of Alternative 2 also would negligibly affect cumulative water quality conditions in the lower Yuba River. Differences in modeled river flow rates and temperatures for the cumulative condition with Alternative 2 are very similar to or identical to those described for Alternative 2 relative to the Existing Condition in Section 8.5.5 (refer to Appendix 4B and Appendix 4C for modeling results). Therefore, for the same reasons as provided in Section 8.5.5, YRDP Impact WQ-Alt1-11 and Narrows Impact WQ-Alt1-1 regarding water operations-related impacts, lower Yuba River water quality would be negligibly affected by operation of Alternative 2. Similarly, as discussed above, lower Yuba River water quality with the cumulative projects listed in Table 4.9-1 is expected to be similar to the Existing Condition. Therefore, the cumulative effect of operation of Alternative 2 combined with the projects listed in Table 4.9-1 would not result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the lower Yuba River.

As discussed in Section 8.6.1.2 for the Proposed Projects, implementation plan activities and routine O&M with Alternative 2 would overlap in time with project operations and the cumulative projects listed in Table 4.9-1, however, the potential for these activities to affect lower Yuba River water quality would be limited, as these activities would occur primarily upstream of Englebright Dam. Therefore, the potential effects to water quality would not combine with these other project components to result in cumulative conditions that would cause exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the lower Yuba river due to the geographic separation of these activities in the watershed and the BMPs that would be in place, as relevant to the activity, to minimize discharges to Project Area waterbodies.

Therefore, the cumulative condition, including Alternative 2, would not result in violation of water quality standards or waste discharge requirements or otherwise substantially degrade lower Yuba River water quality. Furthermore, the cumulative condition, including Alternative 2, would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the lower Yuba River. Where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. Therefore, under the cumulative condition, including Alternative 2, the cumulative impact on water quality of the lower Yuba River would be less than significant.

8.6.3.3 Areas Downstream of the Lower Yuba River

For same reasons described for the Proposed Projects in Section 8.6.1.3, Feather River and Sacramento River water quality under the cumulative condition is expected to be similar to the Existing Condition given that the source waters would be the same, only the quantity of water may differ seasonally. Cumulative Delta water quality conditions are uncertain given the scope and complexity of the factors that interact to affect Delta water quality. Given the uncertainty, the cumulative condition could result in exceedance of a water quality objective/criterion by frequency, magnitude, and geographic extent that would result in adverse effects on beneficial uses, or substantial long-term degradation of water quality that would increase the likelihood of adverse effects on beneficial uses of the Delta.

As such, the cumulative condition, including Alternative 2, is not expected to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site or create or contribute runoff water that would provide substantial additional sources of polluted runoff to the Delta. Furthermore, where relevant, cumulative projects would be subject to environmental regulatory permits, such as a CWA Section 401 WQC or waste discharge requirements, which would result in implementation of the applicable Basin Plan. However, based on the above analysis, the cumulative condition, including Alternative 2, could substantially degrade surface water quality in the Delta. Therefore, under the cumulative condition, including Alternative 2, the cumulative impact on Delta water quality is considered significant.

YRDP construction activities under Alternative 2 would be limited to areas upstream of Englebright Dam. Because no new facilities are proposed for the Narrows Project under Alternative 2 there would be no cumulative impacts on Delta water quality resulting from construction activities related to this alternative. Furthermore, based on analysis presented in Section 8.5.5, YRDP Impact WQ-Alt2-12, operation of Alternative 2 would not result in detectable changes in Feather River flows downstream of the Yuba River, the Sacramento River downstream of the Feather River, or the Delta compared to the Existing Condition. Therefore, the incremental contribution of Alternative 2 to the cumulative impact on Feather River, Sacramento River, and Delta water quality would not be cumulatively considerable.

8.6.3.4 Cumulative Impact Determination

YRDP Cumulative Impact WQ-Alt2-1. Cumulative Impacts on Surface Water Quality from Construction, Operation, and Maintenance of the YRDP
Based on the above discussion, the cumulative water quality condition, including Alternative 2, in Project Area waterbodies within New Bullards Bar Reservoir could be significant. The cumulative water quality condition in the Delta, including Alternative 2, also could be significant. The cumulative water quality condition of the other Project Area waterbodies would be less than significant. The contribution of Alternative 2 to the significant cumulative water quality condition in the Delta would not be cumulatively considerable. However, the contribution of Alternative 2 to the significant cumulative water quality condition in New Bullards Bar Reservoir would be cumulatively considerable. As such Alternative 2 would result in a **significant** cumulative impact on water quality.

The SWRCB's (2023) Draft Staff Report includes "Mitigation Measure MM-SW-a,f:" to address potentially significant water quality impacts. This mitigation measure addresses mercury impacts, temperature control and reservoir management, harmful algae blooms and invasive aquatic weeds, and municipal water quality protection. However, even with implementation of this mitigation measure, the SWRCB concluded that water quality impacts would remain potentially significant (SWRCB 2023, pp.1-19, 1-34). As such Alternative 2 would result in a **significant and unavoidable** impact on water quality.

Narrows Cumulative Impact WQ-Alt2-1. Cumulative Impacts on Surface Water Quality from Operation and Maintenance of the Narrows Project
Based on the above discussion, the cumulative water quality condition, including Alternative 2, in Project Area waterbodies downstream of the Narrows Project (i.e., the lower Yuba River, the Feather River, and Sacramento River) would be less than significant. However, the cumulative water quality condition in the Delta, including Alternative 2, could be significant. The contribution of Alternative 2 to the significant cumulative water quality condition in the Delta would not be cumulatively considerable. As such Alternative 2 would result in a **less than significant** cumulative impact on water quality.

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CHAPTER 9

FISHERIES RESOURCES

9.1 Introduction

This chapter describes the environmental setting, regulatory setting, impact assessment methodology and impact analyses for fisheries resources for the Proposed Projects and Alternatives. This section also summarizes information regarding specific topics and analyses that are addressed in more detail in the following appendices referenced in this chapter.

- Appendix 9A - Lower Yuba River Anadromous Fisheries Resources
- Appendix 9B - Lower Yuba River Flow-Dependent Habitat Availability Methodology
- Appendix 9C - Fisheries Simulated Operations Analyses
- Appendix 9D - Upper Yuba River Watershed Fisheries Data Products
- Appendix 9E - Lower Yuba River Fisheries Data Products

9.2 Environmental Setting

This section summarizes available information regarding fisheries resources in the Project Area under existing conditions to inform analyses of potential impacts of the Proposed Projects and Alternatives.

9.2.1 Geographic Extent of the Environmental Setting

9.2.1.1 Yuba River Development Project

The geographic area that could be affected by the YRDP and that has been identified for this DEIR includes the following Yuba River Watershed streams and waterbodies (Figure 9.2-1).

- North Yuba River below its confluence with Slate Creek downstream to New Bullards Bar Reservoir.
- New Bullards Bar Reservoir (NBBR).
- North Yuba River below New Bullards Bar Dam (NBBD) to its confluence with the Middle Yuba River.
- Log Cabin Diversion Dam (LCDD) Impoundment on Oregon Creek.
- Oregon Creek below LCDD downstream to its confluence with the Middle Yuba River.
- Our House Diversion Dam (OHDD) Impoundment on the Middle Yuba River.
- Middle Yuba River below OHDD to its confluence with the North Yuba River.

- Upper Yuba River (confluence of North and Middle Yuba rivers downstream to Englebright Reservoir).
- Englebright Reservoir.
- Lower Yuba River below Englebright Dam to its confluence with the Feather River.

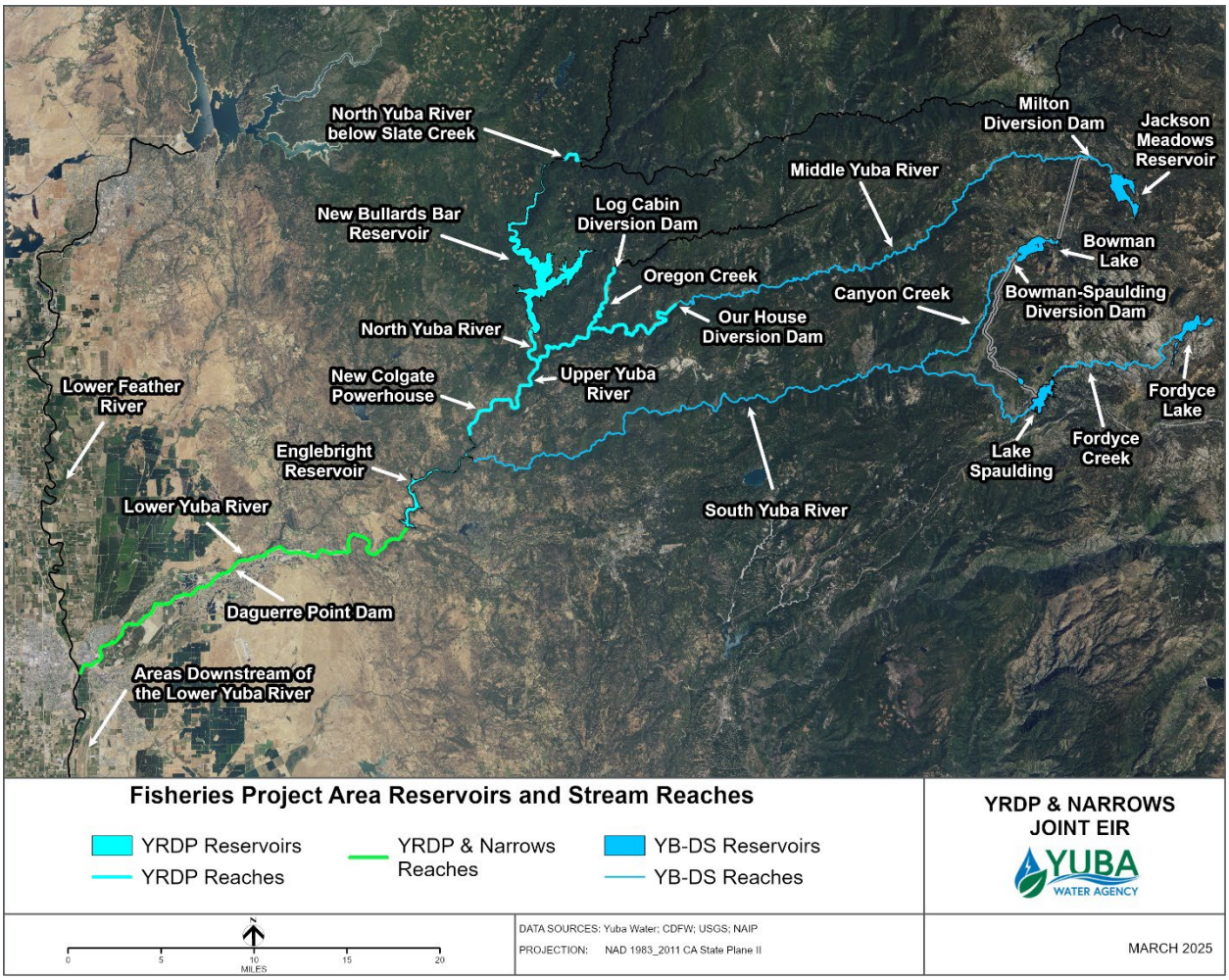

Figure 9.2-1. Fisheries Project Area reservoirs and stream reaches.

In addition, due to the potential for indirect impacts or indirect cumulative impacts that may occur because of potential YB/DS operational changes associated with the provision of 15.6 TAF under Alternative 1 (see Chapter 4 of this DEIR), the following additional areas are included in the Project Area.

- Jackson Meadows Reservoir.
- Middle Yuba River below Jackson Meadows Dam and Milton Diversion Dam to the OHDD Impoundment.
- Bowman Lake.

- Canyon Creek below Bowman Lake and Bowman-Spaulding Canal Diversion Dam to its confluence with the South Yuba River.
- Fordyce Lake.
- Fordyce Creek from Fordyce Lake to Lake Spaulding.
- Lake Spaulding.
- South Yuba River below Lake Spaulding to Englebright Reservoir.

9.2.1.2 Narrows Project

The geographic area that could be affected by the Narrows Project that has been identified for this DEIR includes the lower Yuba River below Englebright Dam to its confluence with the lower Feather River.

9.2.1.3 Areas Downstream of the Lower Yuba River

Lower Yuba River outflows and water temperatures have the potential to influence flow and water temperature-related conditions in the lower Feather River downstream of the lower Yuba River, the Sacramento River downstream of the Feather River, and the Delta. Therefore, these areas are considered in the fisheries Project Area.

9.2.2 YRDP Reaches and Reservoirs Upstream of Englebright Dam

The FERC and USACE (2019) Final Environmental Impact Statement for Hydropower License, Yuba River Development Project (FEIS) described existing physical habitat and fisheries resources in the upper Yuba River Watershed affected by the YRDP based largely on information provided in YRDP relicensing study reports[1] and YRDP Amended Final License Application (AFLA; Yuba Water 2017), which described conditions that existed as of the early 2010s.

9.2.2.1 North Yuba River Watershed

9.2.2.1.1 North Yuba River Downstream from Confluence with Slate Creek

The geographic scope for the YRDP (FERC and USACE 2019) includes the North Yuba River from the confluence with Slate Creek downstream approximately 0.1 miles to the ordinary high-water mark of NBBR. This confluence has a small fine sediment deposit of 0.6 acres, which is primarily influenced by high flow events in the North Yuba River and Slate Creek combined with

[1] Yuba Water's YRDP Relicensing TMs that provide relevant information regarding fisheries resources and physical habitat conditions in the YRDP project area in the upper Yuba River Watershed include: TM 1-1 – Channel Morphology Upstream of Englebright Reservoir (Yuba Water 2013a), TM 2.4 – Bioaccumulation (Yuba Water 2012a), TM 2-5 – Water Temperature Monitoring (Yuba Water 2013b), TM 2-6 – Water Temperature Models (Yuba Water 2013c), TM 3-1 – Aquatic Macroinvertebrates Upstream of Englebright Reservoir (Yuba Water 2013d), TM 3-7 – Reservoir Fish Populations (Yuba Water 2012b), TM 3-8 – Stream Fish Populations Upstream of Englebright Reservoir (Yuba Water 2013e), TM 3-10 – Instream Flow Upstream of Englebright Reservoir (Yuba Water 2013f), TM 3-11 – Entrainment (Yuba Water 2013g), TM 3-12 – New Colgate Powerhouse Ramping (Yuba Water 2012c), and TM 6-1 – Riparian Habitat Upstream of Englebright Reservoir (Yuba Water 2013h).

high elevations of the reservoir that create a backwater effect at this confluence (Yuba Water 2013a).

During surveys in 2008 and 2009, rainbow trout represented the most abundant species (1,602-4,566 fish/mile) followed by Sacramento sucker, Sacramento pikeminnow, and brown trout (Yuba Water 2017). Multiple age classes of both rainbow trout and brown trout were captured during this effort with young-of-year trout being the most abundant (Yuba Water 2017). This section of the North Yuba River is not addressed further in this DEIR because there are no changes in modeled flows and water temperatures under the Proposed Projects or alternative scenarios relative to the bases of comparison.

9.2.2.1.2 New Bullards Bar Reservoir

New Bullards Bar Reservoir (NBBR), which is formed by the impoundment of the North Yuba River by NBBD, supports both coldwater and warmwater fisheries and has a long history of fish stocking activities by CDFW dating back to 1959 (see Yuba Water 2017). Salmonid species have been the primary fish species planted in the reservoir. These have included rainbow trout (*Oncorhynchus mykiss*), kokanee (*O. nerka*), brook trout (*Salvelinus fontinalis*), and cutthroat trout (*O. clarkii*) (Yuba Water 2017). Although warmwater fish species, both centrarchids and ictalurids (crappie, black bass, and sunfish), have historically been reported to occur in NBBR, limited recreational fisheries historically existed for these warmwater fish species (Yuba Water et al. 2007). NBBR supports a very significant salmonid fishery emphasizing kokanee salmon and is known for having some of the best kokanee salmon fishing in California (Yuba Water et al. 2007). Yuba Water (2017) documented 11 fish species during reservoir fisheries sampling in NBBR during sampling events in January and June of 2012 with gill netting and boat electrofishing. Spotted bass (*Micropterus punctulatus*) was the most common species collected, accounting for about 66% of the total catch. Other common species included bluegill (*Lepomis macrochirus*), green sunfish (*L. cyanellus*), rainbow trout, kokanee, and common carp (*Cyprinus carpio*). Less common species recorded included Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow (*Ptychocheilus grandis*), white catfish (*Ameiurus catus*), brown bullhead (*A. nebulosus*), and white crappie (*Pomoxis annularis*). Largemouth bass (*M. salmoides*) and smallmouth bass (*M. dolomieu*), which were historically documented in the reservoir, were not found during Yuba Water's study (Yuba Water 2017).

During 2012, tributaries to NBBR were assessed for fish passage impediments. The water surface elevation of NBBR can affect the extent of riverine habitat in tributaries to the reservoir. Surveys in 2012 were conducted within the ordinary high water surface elevation of the reservoir despite the surface elevation of the reservoir being lower than normal during the actual survey. Surveys on nine accessible tributaries found no permanent barriers (Yuba Water 2017). Operational changes in NBBR do not appear to create fish passage impediments for upstream migration (Yuba Water 2017). Fisheries surveys conducted in the nine tributaries only observed rainbow trout, Sacramento sucker, and brown trout (Yuba Water 2017). Additionally, four other tributaries were surveyed, with multiple passage impediments identified at low reservoir levels. However, it is expected that these passage impediments would be inundated at normal reservoir levels and, therefore, would not restrict access into these tributaries by adfluvial fish species during typical reservoir operations.

9.2.2.1.3 North Yuba River Below New Bullards Bar Dam

The North Yuba River below NBBD extends for about 2.3 miles downstream to its confluence with the Middle Yuba River. The following description is generally taken from Yuba Water's habitat mapping of the North Yuba River below NBBD (Yuba Water 2013a). The channel of the North Yuba River (NBBD Reach) is dominated by gradients below 3 percent with an average gradient of 2%. Most of the reach is composed of bedrock and car- and house-sized boulders that separate large mid-channel pools. There are very short and infrequent areas of cobble-sized deposits, but most of the substrate is large and immobile. There is no apparent floodplain or terrace development. Aquatic habitat is dominated by pocketwater and mid-channel pools. Instream object cover is reported to be restricted to boulders, but the depth of pools can also provide cover to resident rainbow trout. Habitat mapping found that trout spawning-sized gravel accumulations and large woody material were rare, and potential natural barriers to resident trout upstream movement likely are very common in the confined, steep channel. Bank erosion also was rare, given the bedrock/boulder channel margins (Yuba Water 2013a).

Yuba Water's 2012 fish population surveys found that Sacramento sucker represented 84.6 percent of collected fish (3,203 fish/mile), followed by 15.0 percent for rainbow trout (567 fish/mi), and a single Sacramento pikeminnow (Yuba Water 2017). During 2013 sampling, rainbow trout represented 74.6 percent of the fish observed (534 fish/mi), whereas Sacramento sucker decreased to 25.4 percent of the represented catch (181 fish/mi). Sacramento pikeminnow was not observed during 2013. All of the Sacramento suckers observed during 2012 were young-of-year (YOY) fish. Rainbow trout were predominantly YOY fish, with relatively low numbers of older age-classes (Yuba Water 2017).

9.2.2.2 Middle Yuba River Watershed

9.2.2.2.1 Our House Diversion Dam Impoundment

Built in 1978, OHDD is a 70-foot-tall impoundment on the Middle Yuba River approximately 12.6 miles upstream of the confluence with the North Yuba River (i.e., Our House Diversion Dam Reach). At ordinary high water surface elevation, OHDD impounds 280 acre-feet and is used to divert up to 860 cfs of water through the Lohman Ridge Diversion Tunnel to the LCDD impoundment on Oregon Creek. Water is released from OHDD by way of two release outlets: (1) a fish release outlet used to discharge water into the downstream Middle Yuba River to maintain minimum instream flows; and (2) a rarely used low-level outlet (FERC and USACE 2019). Only one site description was conducted during electrofishing upstream of OHDD. The habitat was described as low-gradient riffle and glide habitat with no suitable spawning substrate or presence of large woody material (Yuba Water 2017). There were no identified fish passage issues.

During fisheries surveys in 2012 and 2013, four fish species were captured including Sacramento sucker, rainbow trout, Sacramento pikeminnow, and brown trout (Yuba Water 2017; Yuba Water 2013b; FERC and USACE 2019). Multiple age classes (0 and 2+) of rainbow trout were present in captures upstream of OHDD during electrofishing surveys in 2012; however, this species was not captured during 2013 (Yuba Water 2017). Species estimates for sampling include 409 fish per mile for rainbow trout in 2012, 131 fish per mile in 2012 and 16 fish per mile in 2013 for Sacramento pikeminnow, and 917 fish per mile in 2012 and 160 fish per mile in 2013 for

Sacramento sucker (Yuba Water 2017). The reach of the Middle Yuba River upstream of the OHDD is characterized as a transitional area between a coldwater and warmwater fishery (Yuba Water 2017). Snorkel surveys from 2008 and 2009 estimated approximately 273-375 rainbow trout per mile, 318-1,885 Sacramento sucker per mile, and 0-68 Sacramento pikeminnow per mile (Yuba Water 2017).

9.2.2.2.2 Middle Yuba River downstream of Our House Diversion Dam

The Middle Yuba River is one of the primary tributaries to the upper Yuba River, which is formed at the confluence of the North Yuba and Middle Yuba rivers. Geology within the Middle Yuba River generally consists of bedrock and boulder substrates, which stabilize the streambed and prevent lateral movement of the channel (FERC and USACE 2019). Large woody debris and spawning gravels are rare within the Middle Yuba River (FERC and USACE 2019). The Middle Yuba River downstream of the OHDD is characterized by an average gradient of 2.5% (Yuba Water 2013a). The channel of the Middle Yuba River is moderately armored, with armoring ratios between 1.4 and 2.7. However, just downstream of Oregon Creek, this ratio is 5.4, indicating strong armoring. Riparian vegetation has increased when comparing photographic analysis from 1969 to 2009 (Yuba Water 2013a). Habitats downstream of the dam include runs, pocket-water, and pools and no large woody material (Yuba Water 2017). Spawning gravel for trout is present downstream of OHDD (Yuba Water 2017).

Surveys downstream of OHDD detected rainbow trout, Sacramento sucker, smallmouth bass, and Sacramento pikeminnow during snorkel surveys in 2012 and 2013 (Yuba Water 2017). Although hardhead was present in past captures during previous surveys (Gast et al. 2005), no hardhead were observed during surveys in 2012 and 2013 (Yuba Water 2017). Sampling in 2012 and 2013 indicated that rainbow trout and smallmouth bass were the most abundant species near RM 12.5. Estimates for rainbow trout were 453 fish/mile in 2012 and 450 fish/mile in 2013, while smallmouth bass were 88 fish/mile in 2012 and 708 fish/mile in 2013 (Yuba Water 2017). Sacramento pikeminnow and Sacramento sucker were not captured during 2012, but 11 fish/mile were estimated for both species from captures during 2013 (Yuba Water 2017). Upstream up the confluence with Oregon Creek near RM 5.0, smallmouth bass were the most abundant species comprising >80 percent of fishes during both 2012 and 2013, with an estimated 1,915 fish/mile in 2012 and 1,282 fish/mile in 2013 (Yuba Water 2017). Rainbow trout estimated densities were 155 fish/mile and 90 fish/mile in 2012 and 2013, respectively (Yuba Water 2017).

9.2.2.2.3 Middle Yuba River Downstream of Oregon Creek

The Middle Yuba River downstream of the confluence with Oregon Creek and upstream of the confluence with the North Yuba River is designated as the Oregon Creek Reach (Yuba Water 2017). This reach of the Middle Yuba River contains low flow barriers at RM 0.2 and 3.2 and a 13-foot-tall cascade at RM 0.4 (Gast et al. 2005). Upstream of the cascade, habitats in this reach include deep pools and deep runs (Yuba Water 2017). Spawning gravel was observed during 2012 but not during 2013 (Yuba Water 2017).

Fish sampling at RM 3.3 in 2012 and 2013 documented rainbow trout, smallmouth bass, and Sacramento sucker with rainbow trout as the most abundant species (Yuba Water 2017). Rainbow trout estimates were 613 fish/mile and 212 fish/mile during 2012 and 2013, respectively.

Smallmouth bass estimates were 126 fish/mile and 212 fish/mile, and Sacramento sucker were 91 fish/mile and 65 fish/mile in 2012 and 2013, respectively. Farther downstream at RM 1.0, smallmouth bass were the most abundant species with 520 fish/mile and 1,345 fish/mile in 2012 and 2013, respectively. Rainbow trout were the second most dominant species with 470 fish/mile and 38 fish/mile in 2012 and 2013, respectively. Sacramento pikeminnow were only observed during 2012 with an estimate of 40 fish/mile.

9.2.2.3 Oregon Creek Watershed

9.2.2.3.1 Log Cabin Diversion Dam Impoundment

Oregon Creek is a tributary to the Middle Yuba River and extends downstream for approximately 17 miles before being impounded by the LCDD. Built in 1968, LCDD is a 43-foot-tall impoundment on Oregon Creek approximately 4.3 miles upstream of the confluence of Oregon Creek and the Middle Yuba River, and this dam does not provide upstream fish passage. The LCDD is used to divert up to 1,100 cfs during winter and spring flows (including flows diverted from the Middle Yuba River at OHDD through the Lohman Ridge Diversion Tunnel) to NBBR through the Camptonville Diversion Tunnel. At ordinary high water surface elevation, the dam impounds 90 acre-feet (FERC and USACE 2019). A fish release outlet discharges water downstream into Oregon Creek to maintain minimum instream flows, and the dam also has a rarely used low-level outlet (FERC and USACE 2019). Only one site description was conducted during electrofishing upstream of LCDD. The habitat was described as low-gradient riffle, run, and pool habitat with 3.0-9.0 square meters of suitable spawning gravel and a small amount (< 10) identified large woody material (Yuba Water 2017). There were no identified fish passage issues. Surveys were conducted by Yuba Water in Oregon Creek during 2012 and 2013 immediately upstream of LCDD (Yuba Water 2017).

During fisheries surveys in 2012 and 2013, Yuba Water documented three species upstream of LCDD during electrofishing. Species captured included Sacramento sucker, rainbow trout, and Sacramento pikeminnow (FERC and USACE 2019; Yuba Water 2013b). Sacramento sucker were the most abundant species (Yuba Water 2017). All life stages of rainbow trout were present in captures (FERC and USACE 2019). Rainbow trout estimates ranged from 72-263 fish per mile in 2012 and 2013, respectively (Yuba Water 2017). Sacramento pikeminnow were less frequent and ranged from 18 to 38 fish per mile in 2012 and 2013, respectively (Yuba Water 2017). Hardhead are reported to have historically occupied Oregon Creek upstream of the dam (Yuba Water 2017).

9.2.2.3.2 Oregon Creek downstream of Log Cabin Diversion Dam

Surveys were conducted by Yuba Water in Oregon Creek during 2012 and 2013 downstream of LCDD to the confluence with the Middle Yuba River (Yuba Water 2017). Habitat in Oregon Creek downstream of LCDD ranges from low gradient riffles and pools in the upper and middle sections of Oregon Creek to bedrock falls and steep gradients in the lower section of Oregon Creek (FERC and USACE 2019). Spawning gravel was present downstream of the dam in 2012 but not in 2013 and further investigation determined that spawning gravel was typically located outside of the active channel (Yuba Water 2017). Oregon Creek has an armoring ratio of 1.7, which indicates moderate armoring of the channel. The majority (68%) is low gradient of 1-3% while the remainder

(32%) is 3-8% (Yuba Water 2013a). Floodplain vegetation has increased when comparing photographic analysis from 1969 to 1993 (Yuba Water 2013a).

Rainbow trout were the most dominant species downstream of the dam representing ≥ 80 percent of species composition with Sacramento sucker and smallmouth bass comprising ≤ 20 percent cumulatively. Estimates for rainbow trout downstream of the dam were 2,266 fish/mile in 2012 and 1,430 fish/mile in 2013 (FERC and USACE 2019), and multiple age classes of rainbow trout were captured (Yuba Water 2017).

9.2.2.4 Upper Yuba River Watershed

The upper Yuba River (i.e., the Yuba River from the confluence of the North Yuba and Middle Yuba rivers downstream to the ordinary high-water mark of Englebright Reservoir) is comprised of the Middle/North Yuba River (upstream of New Colgate Powerhouse) and New Colgate Powerhouse (downstream of New Colgate Powerhouse) reaches, and is predominantly bedrock-controlled with only very short boulder/cobble sections. Consequently, the channel is laterally and vertically stable. Sinuosity is very low as there are no plan and profile sections strongly influenced by alluvial deposition. Pools are large and deep, and separated by long sections of pocketwater that runs through and under very large boulders. Finer sediment (cobble and finer) accumulations are uncommon. Though not very steep, according to the mapped gradient of 1.8 percent, high gradient riffles dominate the gradient "steps." The river flows through bedrock canyons, and the vertical walls inhibit ground access. The only location that was ground-mapped was the area just above and below New Colgate Powerhouse (25% of the reach). Habitat is dominated by mid-channel pools and pocketwater formed between large boulders. Boulders were the only instream cover type identified, although deep pools likely also provide some cover. Large woody debris was not found, and trout spawning-sized gravel accumulations were uncommon (Yuba Water 2013a). A comparative photographic analysis from 1998 to 2009 indicates that riparian vegetation has increased over that time (Yuba Water 2013a).

9.2.2.4.1 Middle/North Yuba River Reach

The Middle/North Yuba River Reach is the portion of the upper Yuba River downstream of the confluence of the North Yuba and Middle Yuba rivers. Habitat in this reach of the Yuba River is dominated by deep water with some small glides in the upper section near RM 39.6 (Yuba Water 2017). Surveys did not detect spawning gravel, large woody material, or impediments to fish passage (Yuba Water 2017). Farther downstream near RM 35.0, habitats included pock-water and pools with less depth than upstream. Additionally, a small amount of spawning gravel (i.e., 3.0 m^2) was observed during both 2012 and 2013.

Fish sampling occurred upstream of the New Colgate Powerhouse during 2012 and 2013. Rainbow trout and smallmouth bass were the most abundant species with rainbow trout comprising >61 percent of fishes in 2012 and smallmouth bass comprising >78% of fishes in 2013 near RM 39.6 (Yuba Water 2017). Density estimates were 543 rainbow trout/mile during 2012 and 243 rainbow trout/mile during 2013, while density estimates of smallmouth bass were 337 fish/mile during 2012 and 889 fish/mile during 2013 (Yuba Water 2017). Sacramento pikeminnow and Sacramento sucker were also observed but in low abundance. Farther downstream at RM 35.0, smallmouth bass were the dominant species during both 2012 and 2013 with estimates of 1,409 fish/mile and

1,257 fish/mile during 2012 and 2013, respectively (Yuba Water 2017). Rainbow trout were also observed but represented less than 7% of the total number of fishes during 2012 and less than 2 percent during 2013 (Yuba Water 2017).

9.2.2.4.2 New Colgate Powerhouse Reach

The New Colgate Powerhouse Reach is the portion of the upper Yuba River that extends downstream from the New Colgate Powerhouse to the ordinary high-water mark of Englebright Reservoir. Habitat in this area is characterized by low gradient riffles, high gradient riffles, runs, steps, and pools (Yuba Water 2017). Some spawning gravel was noted in the area downstream of New Colgate Powerhouse near RM 33.7 (Yuba Water 2017).

Rainbow trout were generally the only species observed during fish surveys downstream of New Colgate Powerhouse with the exception of one individual adult brown trout during 2012. Rainbow trout density estimates were 323 fish/mile and 560 fish/mile during 2012 and 2013, respectively (Yuba Water 2017). Multiple age classes from 0-2+ were observed in this reach. Additionally, this reach is used for spawning by kokanee based on observations of kokanee carcasses downstream of the powerhouse (Yuba Water 2017).

9.2.2.4.3 Englebright Reservoir

Englebright Reservoir is located downstream of the upper Yuba and South Yuba rivers. With a storage capacity of approximately 70 TAF, Englebright Reservoir essentially serves as a re-regulating afterbay for releases from NBBD and generally acts as a flow-through facility. Yuba Water does not own the Englebright Dam or Englebright Reservoir, and these are not licensed as part of the Yuba River Development Project (Yuba Water 2017; FERC and USACE 2019). However, data from sampling and surveys of Englebright Reservoir are important for informing management decisions for the upper Yuba River Watershed and natural resources. Englebright Reservoir supports warmwater and coldwater fish species, including rainbow trout, brown trout, catfish, crappie, smallmouth bass, green sunfish and bluegill (USACE 2020). Yuba Water's fish population sampling at Englebright Reservoir during 2012 documented 11 fish species with gill netting and boat electrofishing. Sacramento sucker (n=114, 31.5%) and spotted bass (n=96, 26.5%) were the more common species collected, followed by hardhead, rainbow trout, bluegill, and Sacramento pikeminnow. Englebright Reservoir has been stocked with fish since 1950 (Yuba Water 2017) and stocking continues annually to support the recreational fishery. Historical stocking included brown trout and rainbow trout (Yuba Water 2017). Rainbow trout were the only salmonid recently stocked in Englebright Reservoir according to the CDFW online fish stocking query tool, and continue to be stocked (CDFW 2025).

Survey results from 2012 (Yuba Water 2017) observed kokanee carcasses near New Colgate Powerhouse, which likely migrated upstream from Englebright Reservoir to spawn in upstream reaches of the upper Yuba River, indicating there are no substantive fish passage impediments that prevent fishes from migrating upstream of the reservoir in the upper Yuba River.

9.2.3 Reaches and Reservoirs Upstream of the YRDP

9.2.3.1 Middle Yuba River Watershed

9.2.3.1.1 Jackson Meadows Reservoir

Jackson Meadows Reservoir is a reservoir on the Middle Yuba River, which is impounded by the Jackson Meadows Dam. This reservoir is part of the NID's Yuba-Bear project and has a capacity of 64,641 acre-feet of storage. Jackson Meadows Dam has two low-level outlets and a three-bay spillway. Water is released from Jackson Meadows Dam into the Middle Yuba River, which travels downstream to Milton Diversion Dam impoundment and then is subsequently released back into the Middle Yuba River from Milton Diversion Dam or diverted to Bowman Lake via the Milton-Bowman Diversion Conduit. A majority of the water released from Jackson Meadows Dam is diverted into the Milton-Bowman Diversion Conduit.

Sampling in Jackson Meadows Reservoir captured rainbow trout, brown trout, brook trout, Lahontan cutthroat trout, tui chub, Lahontan redside, and speckled dace, brown bullhead (FERC 2014). Historical records indicate that brown bullhead and Artic grayling occurred in Jackson Meadows Reservoir, but Artic grayling are believed to be extirpated (FERC 2014). Previous fish stocking occurred for rainbow trout, brown trout, brook trout, and Eagle Lake rainbow trout (FERC 2014). Fish are stocked annually in Jackson Meadows Reservoir according to the CDFW online fish stocking query tool.

9.2.3.1.2 Middle Yuba River below Jackson Meadows Dam to Our House Diversion Dam

The Middle Yuba River upstream of OHDD has two impoundments including Jackson Meadows Reservoir (the most upstream impoundment) followed by the Milton Diversion Dam impoundment. This area of the Middle Yuba River is divided into two reaches based on their location downstream of these dams. These reaches are referred to as the Jackson Meadows Dam Reach (downstream of Jackson Meadows Dam to Milton Diversion Dam impoundment) and Milton Diversion Dam Reach (downstream of Milton Diversion Dam impoundment to OHDD). The Jackson Meadows Dam Reach is approximately 1.6 miles long with a 3.9 percent gradient. This reach of the Middle Yuba River is used for water conveyance between Jackson Meadows Reservoir to Milton Diversion Dam. Habitat in the Jackson Meadows Dam Reach is characterized by riparian forests with large portions of unvegetated rocky slopes. The Milton Diversion Dam Reach is approximately 32 miles long with a 2.8 percent gradient. There is a large wetland at the inflow to the Milton Diversion Dam impoundment. Under the existing license, the minimum instream flow requirement downstream of Milton Diversion Dam is 3 cfs. There are several tributaries between Milton Diversion Dam and OHDD (e.g., Wolf and Kanaka creeks) that contribute flow and affect water temperature in this reach (FERC 2014).

Fish species historically present in the Middle Yuba River included rainbow trout, brown trout, brook trout, cutthroat trout, Lahontan cutthroat trout, Sacramento sucker, Sacramento pikeminnow, hardhead, and smallmouth bass (FERC 2014). Sampling in 2008 and 2009 captured only rainbow trout, brown trout, Sacramento sucker, Sacramento pikeminnow, and Lahontan redside, with both trout species comprising the majority of the catch (FERC 2014).

Fish species in the Jackson Meadows Dam Reach that were captured during relicensing studies in 2008 and 2009 include rainbow trout, brown trout, and Lahontan redside (FERC 2014). Fish species historically present but believed to be extirpated include brook trout and cutthroat trout. Fish species in the Milton Diversion Dam Reach that were captured during relicensing studies in 2008 and 2009 include rainbow trout, brown trout, Sacramento sucker, and Sacramento pikeminnow. Fish species historically present include brook trout, cutthroat trout, hardhead, largemouth bass, and smallmouth bass.

9.2.3.2 South Yuba River Watershed

9.2.3.2.1 Bowman Lake

Bowman Lake provides habitat for fish species including rainbow trout, brown trout, kokanee, Lahontan redside, and speckled dace. Historical records indicate golden shiner and green sunfish also occurred in Bowman Lake (FERC 2014). Eagle Lake rainbow trout and kokanee were historically stocked in Bowman Lake from 2002-2009 (FERC 2014). No fish stocking was done in 2024 per the CDFW fish stocking online query tool.

9.2.3.2.2 Canyon Creek

Water is released from Bowman Lake into the Bowman-Spaulding Canal Diversion Dam (BSCDD) impoundment, and then from BSCDD into Canyon Creek. Canyon Creek downstream of BSCDD is about 10 miles from the dam to the confluence with the South Yuba River. This reach is characterized by granite bedrock in the upstream portion of this reach and dense forest and steep slopes in the downstream portion (FERC 2014).

Fish capture data is limited for Canyon Creek, however, sampling in 2008 and 2009 captured rainbow trout, brown trout, and brook trout in the Canyon Creek and Texas Creek sub-basins (FERC 2014).

9.2.3.2.3 Fordyce Lake and Creek

Water released from Fordyce Lake Dam flows into Fordyce Creek which flows into Lake Spaulding. During sampling in 2009, Lahontan cutthroat trout, rainbow trout, brown trout, brook trout, and tui chub were captured in Fordyce Lake (FERC 2014). Rainbow trout were historically stocked in Fordyce Lake during 2002-2009 (FERC 2014). No fish stocking was done in 2024 as per the CDFW fish stocking online query tool. Fisheries surveys in Fordyce Creek downstream of Fordyce Lake Dam identified rainbow trout, brown trout and roach (NID and PG&E 2009).

9.2.3.2.4 Lake Spaulding

Lake Spaulding has a storage capacity of 75,912 ac-ft and is impounded by Lake Spaulding Dam No. 1 and Lake Spaulding Dam No. 2. Water flows into Lake Spaulding from Fordyce Lake via the Fordyce Lake dam spillway and outlet to Fordyce Creek. Water released from Lake Spaulding flows into the South Yuba River, Jordan Creek, South Yuba canal, and Drum canal depending on whether water is released from Lake Spaulding Dam No.1 or Lake Spaulding Dam No. 2.

During sampling in 2009, rainbow trout, Chinook salmon, brown trout, brook trout, pond smelt, Sacramento pikeminnow, Lahontan redside, Sacramento sucker, and smallmouth bass were identified in Lake Spaulding (FERC 2014). Chinook salmon were historically stocked in Fordyce Lake between 2002-2009 (FERC 2014). No fish stocking was done in 2024 as per the CDFW fish stocking online query tool.

9.2.3.2.5 South Yuba River below Spaulding Dam to Englebright Reservoir

The South Yuba River flows out from both the Lake Spaulding Dam No. 1 through the low-level outlet and through Lake Spaulding Dam No. 2 through the powerhouse via the South Yuba canal. The South Yuba River from Lake Spaulding to the ordinary high-water mark of Englebright Reservoir is approximately 41.1 miles with a mean gradient of 2 percent.

During sampling in 2008 and 2009, rainbow trout and brown trout were captured in the South Yuba River below the Lake Spaulding No. 2 Powerhouse. Brook trout and Sacramento pikeminnow were historically present; however, they are now believed to be extirpated in this reach. During sampling in 2008 and 2009, rainbow trout, brown trout, Sacramento sucker, Sacramento pikeminnow, smallmouth bass, and green sunfish were captured in downstream reaches.

9.2.4 Lower Yuba River

As described above, FERC and USACE (2019) described existing physical habitat and fisheries resources in the lower Yuba River based largely on information provided in Yuba Water's Yuba YRDP relicensing study reports[2] and Yuba Water 2017, which described conditions that existed as of the early 2010s. Further, Yuba Water's (2023a) Final License Application (FLA) for the Narrows Hydropower Project (Narrows) provided available updated information regarding lower Yuba River fisheries resources relevant to the Narrows FERC relicensing process.

The lower Yuba River extends for about 24 miles downstream of Englebright Dam. Geomorphic reaches were delineated by Wyrick and Pasternack (2012) into eight segments based on the longitudinal profile and associated geomorphic variables. Tributary junctions form the upstream boundary of two reaches, and dams form the boundary for two more reaches. The other reach boundaries are formed by hydro-geomorphic variables such as the onset of emergent floodplain gravel, transition from confined bedrock valley to wider, meandering system, and decreases in bed

[2] Yuba Water's YRDP Relicensing TMs that provide relevant information regarding fisheries resources and physical habitat conditions in the lower Yuba River include: TM 1-2 – Channel Morphology Downstream of Englebright Dam (Yuba Water 2013i), TM 2.4 – Bioaccumulation (Yuba Water 2012a), TM 2-5 – Water Temperature Monitoring (Yuba Water 2013b), TM 2-6 – Water Temperature Models (Yuba Water 2013c), TM 3.2 – Aquatic Macroinvertebrates Downstream of Englebright Dam (Yuba Water 2013j), TM 3-9 – Non-ESA-Listed Fish Populations Downstream of Englebright Dam (Yuba Water 2012d), TM 6-2 – Riparian Habitat Downstream of Englebright Dam (Yuba Water 2013k), TM 7-8 ESA/CESA-Listed Salmonids Downstream of Englebright Dam (Yuba Water 2013l), TM 7-9 Green Sturgeon Downstream of Englebright Dam (Yuba Water 2013m), TM 7-10 – Instream Flow Downstream of Englebright Dam (Yuba Water 2013n), TM 7-11 – Fish Behavior and Hydraulics Near Narrows 2 Powerhouse and TM 7-11a – Radio Telemetry Study of Spring- and Fall-run Chinook Salmon Downstream of Narrows 2 Powerhouse (Yuba Water 2016), TM 7-12 – Evaluation of Project Effects on Daguerre Point Dam and Hallwood-Cordua Fish Facilities (Yuba Water 2013o), and TM 7-13 – Fish Stranding Associated with Shutdown of Narrows 2 Powerhouse Partial Bypass (Yuba Water 2014).

channel slope. Table 9.2-1 provides length and gradient of each of the reaches. Figure 9.2-2 provides a map of the geomorphic reaches in relation to local landmarks.

Table 9.2-1. Geomorphic reaches in the Yuba River downstream from Englebright Dam.

Reach Name	Description	Gradient (%)	Start (RM)	End (RM)	Length (mi)
Englebright Dam	Confluence with Deer Creek to Englebright Dam	0.31	23.4	24.3	0.9
Narrows	Deer Creek to emergent gravel at canyon mouth	Not Measurable	22.3	23.4	1.1
Timbuctoo Bend	Upstream of Hwy 20 Bridge to end of emergent gravel bar by Blue Point Mine	0.20	18.6	22.3	3.8
Parks Bar	Dry Creek to 0.35 mi upstream of Hwy 20 Bridge	0.19	13.9	18.6	4.7
Dry Creek	Daguerre Point Dam to Dry Creek	0.14	11.6	13.9	2.3
Daguerre Point Dam	RM 8.3 to Daguerre Point Dam	0.18	8.3	11.6	3.3
Hallwood	RM 3.3 to slope break near Eddie Drive at RM 8.3	0.13	3.3	8.3	5.0
Marysville	Junction with Feather River to RM 3.3	0.05	0.0	3.3	3.3
Total		0.16	0.0	24.3	24.3

Source: Yuba Water 2017.

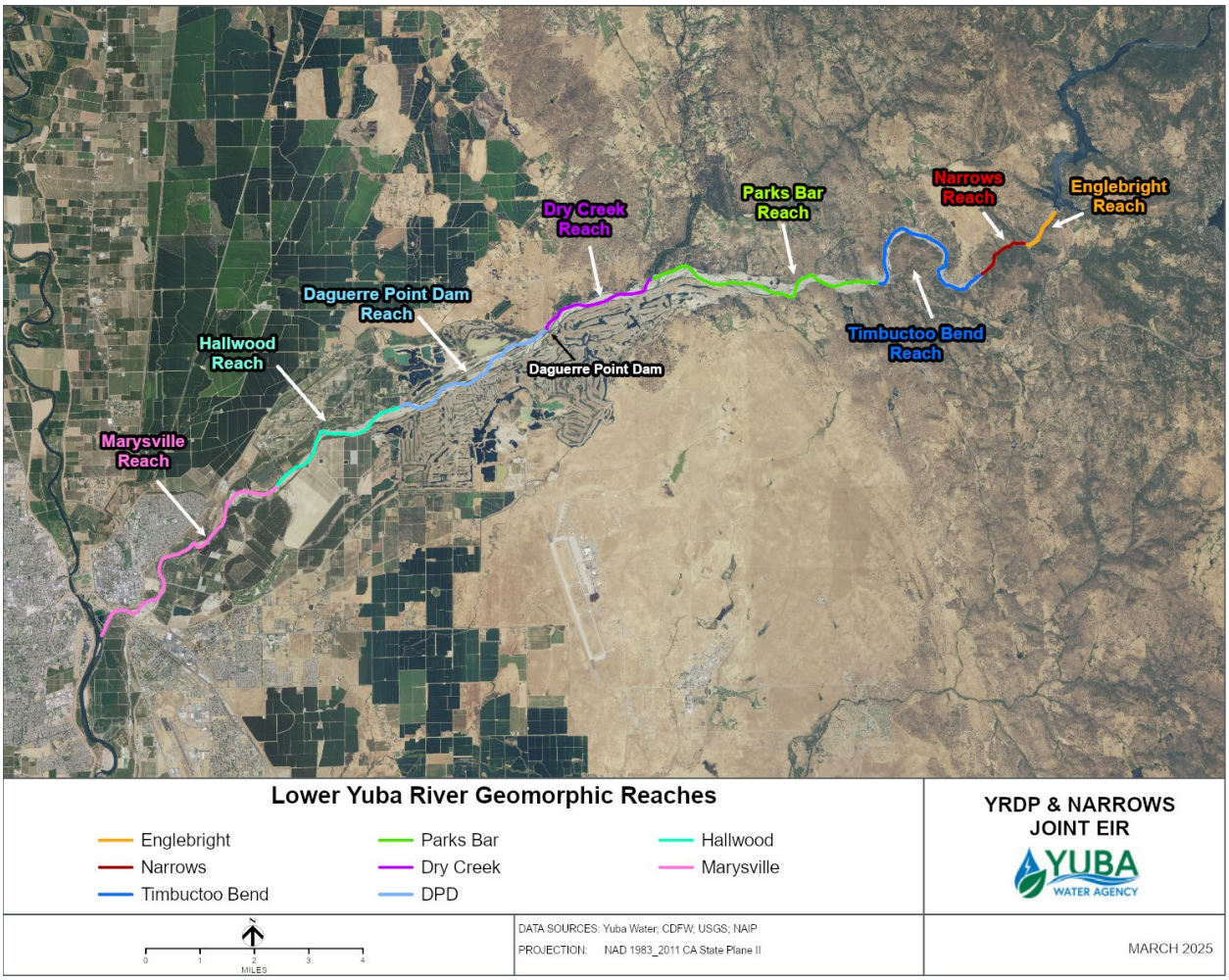

Figure 9.2-2. Map of geomorphic reach boundaries in the lower Yuba River.

9.2.5 Fish Species of Management Concern

In addition to fish species listed as threatened or endangered under the Federal ESA or California ESA (CESA), Yuba Water searched several additional sources including the CNDDB, the July 2024 Special Animals List maintained by CDFW (CNDDB 2024), NMFS and USFWS online databases, and environmental documents to identify other fish species of management concern that may occur within the Project Area. These other fish species include: (1) species that are formally proposed for federal listing or are candidates for federal listing as threatened or endangered; (2) federal species of concern; (3) species managed by the Pacific Fisheries Management Council (PFMC); (4) species that are candidates for State listing as threatened or endangered; (5) species identified by CDFW as California Species of Special Concern; and (6) species designated by California statute as fully protected (i.e., California Fish and Game Code, Section 5515 [fish]). Additional fish species evaluated include focal species addressed in FERC Relicensing processes and those that have tribal, recreational, or commercial importance.

9.2.5.1 Areas Upstream of Englebright Dam

No ESA or CESA-listed fish species are present within the Project Area upstream of Englebright Dam. California State species of special concern with the potential to occur in the upper Yuba River Watershed include hardhead and the Central California roach subspecies. Additional fish species of management concern considered in this DEIR include native species that have been the focus of FERC Relicensing processes in the Project Area (described below) and species that are of commercial or recreational importance. Target species and life stages for habitat modeling during the YRDP Relicensing studies were selected by YRDP Relicensing Participants (including NMFS, USFWS, CDFW, and USFS) based on species importance and YRDP O&M activities (Yuba Water 2013f). Species included for the YRDP reaches of upper Yuba River Watershed were rainbow trout, hardhead, Sacramento pikeminnow, and Sacramento sucker. YB/DS Relicensing Participants also evaluated habitat availability for rainbow trout, Sacramento sucker, and hardhead/pikeminnow[3], depending on the reach, in the Middle Yuba River upstream of OHDD, Canyon Creek downstream of the BSCDD, Fordyce Creek below Fordyce Lake Dam, and in reaches of the South Yuba River downstream of Lake Spaulding (NID and PG&E 2010). Rainbow trout was the focal fish species targeted for habitat enhancement by both the YRDP Relicensing Participants (FERC and USACE 2019) and the YB/DS Relicensing Participants (FERC 2014). Additional fish species that are of recreational importance in the upper Yuba River Watershed include kokanee and black bass. Brief descriptions of fish species of management concern in areas upstream of Englebright Dam are provided below.

9.2.5.1.1 Rainbow trout

Rainbow trout occur throughout the upper Yuba River Watershed, including the North Yuba River below NBBD, the upper Yuba River, the Middle Yuba River, Canyon Creek, Fordyce Creek, the South Yuba River, and in all reservoirs and diversion dam impoundments (Yuba Water 2017; NID and PG&E 2009). Stocking of trout occurs annually in the Yuba River Watershed.

Optimal rainbow trout habitat is characterized by conditions similar to those described for brown trout, including: (1) silt-free rocky substrate in riffle-run areas; (2) an approximately 1:1 pool-to-riffle ratio, with areas of slow, deep water; (3) well-vegetated and stable stream banks; and (4) abundant instream cover (Raleigh et al. 1984). Rainbow trout spawn during April through June in the YRDP reaches of the upper Yuba River Watershed (Yuba Water 2017), as well as in the Middle Yuba River upstream of OHDD and in the South Yuba River downstream of Spaulding Dam (NID and PG&E 2010). In Fordyce Creek below Fordyce Lake Dam and in Canyon Creek below the BSCDD, rainbow trout spawn during May through July (NID and PG&E 2010). Fry rearing may occur during May through October, with juveniles and adults rearing year-round (NID and PG&E 2010). Rainbow trout fry prefer relatively shallow water and slow water velocities, particularly in pool habitats within 1 meter of cover (Raleigh et al. 1984). Both juvenile and adult rainbow trout are opportunistic feeders and consume a wide variety of foods, particularly aquatic insects (Raleigh et al. 1984).

[3] Due to similar habitat preferences by hardhead and Sacramento pikeminnow, a single set of habitat-flow relationships were developed by lifestage for hardhead and Sacramento pikeminnow.

9.2.5.1.2 Hardhead

Hardhead is typically found within larger mid- and low-elevation streams where summer mean daily water temperatures exceed about 20°C (68°F) (Moyle 2002). Historically, hardhead was considered a widespread and locally abundant species within its range. However, substantial alteration of its relatively specialized habitat requirements as well as predation and competition from introduced black bass and other centrarchids have resulted in population declines and isolated populations (Moyle 2002). Smallmouth bass have been reported to result in diminished hardhead abundance in the Central Valley, including in the upper Kings River and in the South Yuba River (Moyle et al. 1995). In the Sacramento River drainage, hardhead is present in most of the larger tributary streams.

Adult hardhead generally rear in clear, deep (>3 ft) pools with sand-gravel-boulder substrates and slow water velocities (Moyle 2002). Juvenile hardhead concentrate in shallow water close to the stream margin (Moyle and Baltz 1985). Hardhead spawning occurs during the spring, when hardhead migrate upstream to gravel riffles, often within tributary streams (Moyle 2002). Hardhead have been reported to spawn primarily during April and May (Grant and Maslin 1999); juvenile recruitment data suggest that hardhead spawn by May and June in most Central Valley streams (Wang 1986). However, spawning may extend into August in some foothill streams (Moyle 2002). In Pine Creek in Tehama County, spawning adults aggregated upstream or downstream of their home pools during spring to spawn, and returned to their home pools after spawning (Grant and Maslin 1999). Although considered a riverine species, hardhead has become well established in mid-elevation reservoirs. The initial establishment of hardhead in recently impounded reservoirs has been reported to be the result of residual populations of juvenile fish growing to large sizes before populations of predatory centrarchids, primarily black bass, were established (Moyle et al. 1995). Power supply reservoirs, which do not draw down over the summer, and which exhibit relatively constant water surface elevations with short-term fluctuations, can inhibit the success of centrarchids and instead favor native stream fishes such as hardhead (and Sacramento pikeminnow and Sacramento sucker) (Moyle 2002). Spawning adults from larger rivers and reservoirs migrate upstream into tributary streams to spawn during the spring (Moyle et al. 1995).

Hardhead has been reported to occur in the upper Yuba River Watershed, including New Bullards Bar and Englebright reservoirs (Yuba Water 2017). Within YRDP reaches upstream of Englebright Dam, fish population studies for the YRDP relicensing found hardhead only in Englebright Reservoir where juveniles and adults were documented (Yuba Water 2017). Hardhead was the third-most common species collected during YRDP Relicensing surveys in Englebright Reservoir, and ranked fourth in biomass (Yuba Water 2017). The length-frequency distribution of hardhead displayed a wide range of ages present in the reservoir, including age-0 and adult fish, indicating the occurrence of natural reproduction (Yuba Water 2017). Englebright Reservoir exhibits relatively stable water surface elevations, but does exhibit short-term fluctuations of approximately 10 ft during the spring, which may help favor native species such as hardhead relative to centrarchids. Although hardhead were not observed or collected in the North Yuba River downstream of NBBD or in the upper Yuba River upstream of Englebright Reservoir during any of the YRDP relicensing studies (Yuba Water 2017), based on the presence of juvenile and adult lifestages in Englebright Reservoir and their upstream migration behavior to spawn in gravel riffles, it is reasonable to assume that hardhead successfully spawn in the upper Yuba River and/or

the South Yuba River. Because water temperatures under existing conditions (see Appendix 4C) are outside of the suitable hardhead spawning water temperature range (59-64.4°F; Wang 1986) during April-June all of the time immediately below NBBD and most (70%) of the time in the lowermost portion of the NBBD Reach (i.e., immediately upstream of the confluence with the Middle Yuba River), spawning and subsequent rearing could be generally expected to be limited to areas downstream of the North Yuba River. As shown in the lower Yuba River (see Section 9.2.5.2.7 below), juvenile hardhead appear to migrate downstream soon after emergence so they would be unlikely to rear in the North Yuba River downstream of NBBD.

Hardhead historically may have occupied the Middle Yuba River and Oregon Creek (Yuba Water 2017), but no hardhead were found in YRDP reaches during YRDP relicensing studies (Yuba Water 2017). Similarly, no hardhead were found in reaches of the Middle Yuba River upstream of the OHDD impoundment during YB/DS relicensing studies (FERC 2014). Although hardhead were not identified during YB/DS relicensing fish studies during 2008 and 2009 in the South Yuba River below Spaulding Dam, Placer County Water Agency reported that surveys during 2012 collected hardhead in the lower to mid portions of the river between RM 8 (near Jones Bar) and RM 20.2 (near Humbug Creek) (FERC 2014). Hardhead were reportedly not observed in YB/DS reservoirs during YB/DS relicensing studies (FERC 2014).

9.2.5.1.3 Central California Roach

The Central California roach is part of the California roach complex, which is composed of various subspecies. The Central California roach is found in the Sacramento and San Joaquin River drainages, except the Pit River, and in other tributaries to San Francisco Bay. The Central California roach is generally found in small, warm intermittent streams, and is most abundant in mid-elevation streams in the Sierra foothills and in the lower reaches of some coastal streams (Moyle 2002). Although roach are abundant in many streams, roach populations have been extirpated from many streams and stream reaches due to human disturbances including diversions and introduced predatory fishes (particularly green sunfish) (Moyle 2002). Brown and Moyle (1993) found that roach were most abundant when they were the only fish species observed. Roach are tolerant of very high water temperatures (86°F to 95°F) and low oxygen levels (1 to 2 mg/L) (Taylor et al. 1982), but they also can be found in cold, well-aerated clear "trout" streams (Taylor et al. 1982), human-modified habitats, and main channels of rivers (Moyle 2002).

Reproduction occurs from March through early July, with spawning typically initiating after water temperatures reach approximately 61°F (Moyle 2002). During the spawning season, schools of fish move into shallow areas with moderate flow and gravel/rubble substrate (Moyle 2002). Females deposit adhesive eggs in the substrate interstices or within emergent vegetation and the eggs are fertilized by attendant males. The eggs hatch within two to three days, and fry remain in the substrate interstices or among emergent vegetation until they are free-swimming (Moyle 2002).

Within the areas upstream of Englebright Dam, Central California roach have been reported to historically occur downstream of NBBD, however, roach were not identified during any of the YRDP relicensing fish population surveys (Yuba Water 2017). The prevalence of smallmouth bass in the upper Yuba River upstream of Englebright Reservoir could be a factor in the lack of recent roach observations. During YB/DS relicensing fish population surveys, roach were identified in Fordyce Creek below Fordyce Lake Dam (NID and PG&E 2009).

9.2.5.1.4 Sacramento pikeminnow

Sacramento pikeminnow are widespread in central California streams and are often in low- to mid-elevation streams with deep pools, slow runs, undercut banks and overhanging vegetation (Moyle 2002). They are most abundant in lightly disturbed reaches with riparian vegetation that also contain other native fish species, particularly hardhead and Sacramento sucker (Moyle 2002). Sacramento pikeminnow typically moves upstream to spawn during April through May in gravel substrates (Moyle 2002). Young feed on macroinvertebrates and switch to larger prey items such as other fish as they grow. Larval rearing occurs in shallows habitats and fish transition to deep water as they develop into juveniles and adults. Sexual maturation occurs at approximately 3 or 4 years old.

Sacramento pikeminnow were found in relatively low abundances but were found throughout the YRDP reaches (Yuba Water 2013e). Sacramento pikeminnow (and Sacramento sucker) was the most abundant sampled non-salmonid species in the YB/DS reaches (NID and PG&E 2009). The highest estimated abundance for Sacramento pikeminnow in the YB/DS reaches was on the South Yuba River (NID and PG&E 2009). Sacramento pikeminnow was the most common fish species collected during surveys in Lake Spaulding (FERC 2014).

9.2.5.1.5 Sacramento sucker

Sacramento suckers are found in a wide variety of waters ranging from cold, fast-flowing streams to warm sloughs (Moyle 2002). They are often associated with other native minnows, particularly Sacramento pikeminnow, hardhead and roach, but also are found in waters dominated by non-native fish species (Moyle 2002). Sacramento suckers typically migrate upstream into a tributary to a large river or reservoir to spawn between late February and June (Moyle 2002). Eggs are adhesive and are deposited over gravel substrate. Sacramento sucker feed on a variety of prey items include macroinvertebrates, detritus, and plant matter.

Sacramento sucker was commonly found throughout the YRDP reaches during YRDP relicensing studies and in the YB/DS reaches during YB/DS relicensing studies (Yuba Water 2017; FERC 2014).

9.2.5.1.6 Black Bass

Black bass in the Centrarchidae family are non-native to California, and this family includes species such as the largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), and spotted bass. Black bass are commonly stocked for recreation. Black bass typically spawn from March through June (Moyle 2002). Young bass use shoreline habitats and then transition to deeper water as they grow older. Smallmouth bass are found throughout the YRDP reaches but were absent at the furthest upstream sites on the North Yuba River, Oregon Creek and Middle Yuba River (Yuba Water 2013e).

9.2.5.1.7 Kokanee

Kokanee are a resident form of sockeye salmon. This adfluvial species spawns in streams during the fall, creating redds similar to other salmonids. Typically, fry emerge from redds in the spring and summer and out-migrate to lakes (Moyle 2002). Kokanee are largely planktivorous, feeding

on zooplankton but they also feed on aquatic macroinvertebrates and forage fishes (Moyle 2002). Kokanee were stocked in reservoirs throughout California, including Englebright and New Bullards Bar reservoirs, and have been observed in the upper Yuba River upstream of Englebright Reservoir and in the North Yuba River upstream of NBBR (Yuba Water 2013e).

9.2.5.2 Lower Yuba River

Fish species of management concern in the lower Yuba River and their status are identified in Table 9.2-2.

Species and lifestage-specific periodicities for the lower Yuba River are shown in Table 9.2-3, and are modified from RMT (2013) and Yuba Water (2017) based on more recent monitoring data and information (described in the table footnotes). Detailed descriptions of the life histories, habitat preferences, status, and factors affecting the anadromous fish species of spring-run Chinook salmon, fall-run Chinook salmon, steelhead, and green sturgeon in the lower Yuba River under existing conditions are provided in Appendix 9A – *Anadromous Fisheries Resources of the Lower Yuba River*. Brief summaries of the information provided in Appendix 9A for spring-run and fall-run Chinook salmon, steelhead, and green sturgeon, as well as brief descriptions of available formation for the other fish species of management concern, are provided below.

Table 9.2-2. Fish species of management concern with the potential to occur in the lower Yuba River.

Common Name/ (Scientific Name)	*Status*[1]						
	ESA-listed	*CESA-listed*	*NMFS-SC*	*CDFW-SSC*	*USFWS-SC*	*PFMC-Managed*	*Tribal, Recreational and Commercial Importance*
Central Valley Spring-run Chinook salmon ESU	*X*	*X*					
Central Valley Steelhead DPS	*X*			*X*			
Southern DPS of North American Green sturgeon	*X*			*X*			
Central Valley Fall- and Late-Fall Run Chinook salmon ESU			*X*	*X*		*X*	*X*
Pacific lamprey				*X*	*X*		
River lamprey				*X*			
Central California roach				*X*			
Hardhead				*X*			
Sacramento hitch[2]				*X*			
Chum salmon[3]						*X*	
Pink salmon[4]						*X*	
Sacramento splittail[5]				*X*			
White sturgeon				*X*			*X*
Striped bass							*X*
American shad							*X*

[1] *NMFS-SC = Classified as a Species of Concern by NMFS.*
USFWS-SC = Designated as a Species of Concern by USFWS.
CDFW-SSC = Designated as a Species of Special Concern by CDFW.
PFMC = Managed by the PFMC.

[2] Although there were some reported observations of Sacramento hitch (*Lavinia exilicauda*) during RST surveys conducted over 20 years ago, they have not been reported in the lower Yuba River during any other surveys, including CDFG (1991) snorkeling and electrofishing surveys, RST surveys after about 2001, Kozlowski (2004) snorkeling and electrofishing surveys, VAKI Riverwatcher™ data from 2004 through 2017, and RMT snorkeling surveys during 2012, 2014 and 2015. Hitch prefer warm, slow-moving waters and have shown a preference for water temperatures of 81-84°F (Knight 1985 as cited in Moyle 2002). Additionally, the lower Yuba River is located outside of the identified range of Sacramento hitch in the CNDDB. For these reasons, Yuba Water has eliminated Sacramento hitch from further consideration in this EIR.

[3] Although chum salmon (*O. keta*) reportedly have been observed in the lower Yuba River in the past, more recent VAKI Riverwatcher™ data indicate that chum salmon observations are rare (2 records during 2013, 1 record during 2017, 2 records during 2018, and 1 record during 2020). Yuba Water (2017) also reports that "Pink and chum salmon are unique visitors to Central Valley streams and have not sustained a viable population in California for over 70 years." For these reasons, Yuba Water has eliminated chum salmon from further consideration in this EIR.

[4] Although two rare observations (9 records during 2011, 2 records during 2013) of pink salmon (*O. gorbuscha*) in the lower Yuba River have been reported, there have been no observations of pink salmon in the VAKI Riverwatcher™ data from 2014 through February 2022. Hence, Yuba Water has eliminated pink salmon from further consideration in this EIR.

[5] CDFW (2015) reports that Sacramento splittail (*Pogonichthys macrolepidotus*) only rarely enter the lower reaches of the Feather River. Although UC Davis (2012) lists the Yuba River downstream of Englebright Dam among the watersheds where splittail occurs, no reference is provided for this determination, and Yuba Water could not find any verified observations of splittail nor was it found during Yuba Water's relicensing studies for the YRDP (Yuba Water 2017). Recent review of VAKI Riverwatcher™ data indicates that no Sacramento splittail have been observed in the lower Yuba River from January 2004 through February 2022. Consequently, Yuba Water has eliminated Sacramento splittail from further consideration in this EIR.

Table 9.2-3. Lifestage periodicities for lower Yuba River fish species of management concern.

Species and Lifestage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Spring-run Chinook Salmon												
Adult Upstream Migration & Holding				■	■	■	■	■	■			
Spawning									■	■		
Embryo Incubation									■	■	■	■
Juvenile Rearing[1]	■	■	■	■	■	■	▨	▨	▨	▨	▨	■
Juvenile Downstream Migration[2]	■	■	■	■	■	■					■	■
Fall-run Chinook Salmon												
Adult Upstream Migration & Staging[3]							■	■	■	■	■	■
Spawning										■	■	■
Embryo Incubation	■	■	■							■	■	■
Juvenile Rearing & Downstream Migration	■	■	■	■	■	■						■
Steelhead												
Adult Upstream Migration & Holding[4]	■	■	■						■	■	■	■
Spawning	■	■	■	■								
Embryo Incubation	■	■	■	■	■							
Juvenile Rearing	■	■	■	■	■	■	■	■	■	■	■	■
Juvenile Downstream Migration[5]	▨	▨	■	■	■	■	■	▨	▨	▨	▨	▨
Green Sturgeon												
Adult Upstream Migration & Holding[6]				■	■	■						
Spawning & Embryo Incubation[7]						■	■	■				
Adult Post-Spawn Holding[8]	■	■	■			■	■	■	■	■	■	■
Adult Post-Spawn Outmigration[8]	■	■	■			▨	▨	▨		■	■	■
Juvenile Rearing & Downstream Migration[9]	■	■					■	■	■	■	■	■
Lamprey[10]												
Adult Upstream Migration			■	■	■	■						
Ammocoete Rearing	■	■	■	■	■	■	■	■	■	■	■	■
Juvenile Downstream Migration[11]	■	■	■	■	■						■	■
Hardhead												
Juveniles and Adults	■	■	■	■	■	■	■	■	■	■	■	■
Spawning			■	■	■	■						
Central California Roach												
Juveniles and Adults	■	■	■	■	■	■	■	■	■	■	■	■
Spawning			■	■	■	■	■	■				

[1] The Yuba River spring-run Chinook salmon YOY (fry and juvenile) rearing period extends from mid-November through June, while the over-summer rearing period exhibited by spring-run Chinook salmon juveniles exhibiting the yearling+ rearing strategy extends from July through mid-November.

[2] Examination of Yuba River RST data (1999-2009) demonstrates that YOY spring-run downstream migration extends from late November through June. Yearling+ individuals emigrate during fall and winter freshets. The application of the Seasonal Flow Detection Algorithm tool (Patterson et al. 2020) to lower Yuba River modeled flows (WY 1970-2017) indicated that the initial freshet date ranged from mid- to late October through mid-December, with a median date of November 29. To cover the vast majority of freshet timing and associated yearling+ emigration, the yearling+ downstream migration period includes all of November, and the overall YOY & yearling+ emigration period extends from November through June.

[3] Fall-run Chinook salmon adult immigration timing based on acoustic telemetry (2009-2011) and VAKI Riverwatcher™ data (2004-2020) used for run differentiation (Poxon and Bratovich 2020).

[4] Although the adult immigration and holding lifestage for steelhead was presented in RMT (2013) and Yuba Water (2017) as extending from August through March, updated analysis of VAKI Riverwatcher™ data indicate that the time period for this lifestage should be revised to extend from September through March.

[5] Examination of year-round (2007 and 2008) Yuba River RST data not affected by rapid initiation of water transfer (2001) demonstrates that the majority of YOY steelhead downstream migration extends from May through July. Year-round RST data (2001, 2007 and 2008) show that yearling+ individuals primarily emigrate during December through April. Because RST data show that juvenile steelhead emigrants are captured to a certain extent during all months of the year, the steelhead juvenile downstream migration period in the lower Yuba River is defined as

occurring year-round, although the majority of steelhead (YOY and yearling+) juvenile outmigrants are captured during February through July.

[6] Based on upstream migration timing of acoustically-tagged adult green sturgeon in the Sacramento River, Colborne et al. (2022) identified that adults primarily migrate upstream during mid-February through mid-May. However, adult green sturgeon are reported to enter the Feather and Yuba rivers between early April and mid-May (CDFW and DWR unpublished data, as cited in Beccio 2022), and observations of green sturgeon eggs and/or larvae in the lower Yuba River indicate that green sturgeon spawning in the lower Yuba River extends from June through July. Consequently, the green sturgeon adult upstream migration and holding period in the lower Yuba River is defined as extending from April through June.

[7] Green sturgeon eggs were documented by CDFW in the lower Yuba River in the DPD plunge pool on June 15, 2018 (Beccio 2018). Additionally, one late-stage green sturgeon larva was collected in the lower Yuba River downstream of DPD on August 22, 2019 (Beccio 2019), and five larval green sturgeon were collected by DWR in RSTs in the lower Yuba River on July 6-7, 2023 (C. Campos pers. comm., July 25, 2023). Based on early lifestage developmental timing described in NMFS (2018), the date of spawning for these green sturgeon larvae documented in the lower Yuba River is estimated to be between June 15 and July 22. The green sturgeon embryo incubation period is reported to extend for 6-8 days (Deng et al. 2002; NMFS 2018). Consequently, the green sturgeon spawning and embryo incubation period in the lower Yuba River is defined as extending from June through July.

[8] Based on downstream migration timing of acoustically-tagged adult green sturgeon in the Sacramento River (Colborne et al. 2022), adults primarily migrate upstream during mid-February through mid-May, and the downstream migration of adults extended primarily from mid-April through July ("early downstream migration") and October through mid-February ("late downstream migration"). However, given the estimated spawn timing for green sturgeon in the lower Yuba River of June through July, the early period of adult post-spawn downstream migration is defined as extending from June through July, while the late period of adult post-spawn downstream migration is defined as extending from October through mid-February. The adult post-spawn holding period consequently is defined as extending from June through mid-February, although adult post-spawn holding has been reported to occur year-round in Sacramento and Feather rivers (Beccio 2022; Miller et al. 2020 as cited in Colborne et al. 2022), and in the lower Yuba River on one occasion (Beccio 2022) during an extremely dry year.

[9] Kynard et al. (2005) laboratory studies indicated that juvenile green sturgeon continued to migrate downstream at night for the first six months of life. NMFS (2018) states "it is unknown how long juveniles remain in upriver rearing habitats after metamorphosis, but they likely spend the first several months in freshwater environments." However, as requested by CDFW staff during discussions regarding the design of the Nature-like Fishway at Daguerre Point, the green sturgeon juvenile rearing and downstream migration period in the lower Yuba River is defined as extending from July through January (C. Purdy pers. comm., May 15, 2023).

[10] The lifestage periodicities identified for lamprey apply to both Pacific lamprey and river lamprey, although river lamprey are much less common than Pacific lamprey in the lower Yuba River.

[11] Based on RST survey data from WY 2004 through WY 2012 at the Red Bluff Diversion Dam on the Sacramento River, the primary emigration period of Pacific lamprey macrophthalmia ranged from November to May (Goodman et al. 2015).

9.2.5.2.1 Spring-run Chinook Salmon

Phenotypic adult spring-run Chinook salmon in the lower Yuba River migrate upstream of DPD from May through September and utilize a broad expanse of the lower Yuba River during the summer holding period, particularly immediately downstream of DPD (RMT 2013). In general, acoustically-tagged spring-run Chinook salmon exhibited an extended holding period, followed by a rapid movement into upstream areas (upper Timbuctoo Reach, Narrows Reach, and Englebright Dam Reach) during September. Based on acoustic tagging, redd survey and carcass survey data, the spring-run Chinook salmon spawning period in the lower Yuba River extends from September 1 through mid-October (RMT 2013). The vast majority of spring-run Chinook salmon spawning occurs upstream of DPD, particularly in the Parks Bar and Timbuctoo reaches (RMT 2013). During the 2009 and 2010 near-census redd surveys only 3-4% of redds constructed during September were located below DPD. Based on 2012, 2014 and 2015 RMT snorkel surveys,

Chinook salmon fry and juveniles were observed in greatest numbers in the Timbuctoo Bend, Parks Bar and Dry Creek reaches upstream of DPD (RMT, unpublished data). Although juvenile spring-run Chinook salmon can rear year-round, rotary screw trap (RST) monitoring data indicate that the vast majority of spring-run Chinook salmon emigrate as post-emergent fry during late November and December.

Summary of Spring-run Chinook Salmon Status in the Lower Yuba River

Based on information and analyses presented in Appendix 9A, annual escapement of phenotypic spring-run Chinook salmon upstream of DPD ranged from 235 in 2015 to 5,275 in 2005, and averaged approximately 1,841 fish annually for the years when data were available from 2004-2023. The phenotypic spring-run Chinook salmon annual population abundance in the lower Yuba River from 2004-2023 is exhibiting a declining trend, although not statistically significant. The influence of hatchery strays is highly variable, but the minimum percentage of hatchery (ad-clipped) contribution to the annual population is increasing over time.

Summary of Factors Affecting Spring-run Chinook Salmon in the Lower Yuba River

Table 9.2-4 includes a comprehensive list of factors/stressors affecting the status of spring-run Chinook salmon in the lower Yuba River under existing conditions (based on information and analyses presented in Appendix 9A), including factors/stressors which have no clear nexus to the Proposed Projects and occur outside of the Project Area, but are included simply in an effort to establish an understanding of the population's ability to withstand additional adverse effects potentially associated with the Proposed Projects or alternatives.

Table 9.2-4. Relative magnitudes of factors/stressors affecting lower Yuba River spring-run Chinook salmon under existing conditions.

Spring-run Chinook Salmon Factor/Stressor	Factor/Stressor Magnitude
Passage Impediments/Barriers	
• Englebright Dam	High
• Daguerre Point Dam	High
Entrainment	
• South Yuba/Brophy	Low
• Hallwood-Cordua	Medium
• BVID	Low
Predation	Low to Medium
Poaching	Medium to High
Hatchery Effects	High
Spawning Habitat Availability	Low
Narrows 1 and 2 Operations	Low
Redd Dewatering	Low
Stranding and Isolation	
• Adults (including Deer Creek)	Medium
• Juveniles	Low to Medium

Spring-run Chinook Salmon Factor/Stressor	Factor/Stressor Magnitude
Harvest/Angling	Low
Natural River Morphology and Function	High
Riparian Habitat and Large Woody Material (LWM)	Medium to High
Floodplain Habitat Connectivity & Availability	Low to Medium
Water Quality	Low
Water Temperature Suitability	Low to Medium
Aquatic Invasive Species	Low

9.2.5.2.2 Fall- and Late Fall-run Chinook Salmon

Adult fall-run Chinook salmon immigration and staging generally occurs in the lower Yuba River from mid-July through December (Poxon and Bratovich 2020). The lower Yuba River fall-run Chinook salmon spawning period has been reported to extend from October through December (RMT 2013). Escapement surveys suggest that approximately three-fourths of fall-run Chinook salmon spawning in the lower Yuba River occurs above DPD (see Appendix 9A). Most fall-run Chinook salmon exhibit downstream movement as fry shortly after emergence from gravels, although some individuals rear in the river for up to several months. Thus, the fry rearing lifestage is considered to extend from mid-December through April, the juvenile rearing lifestage extends from mid-January through June, and the fry and juvenile downstream movement lifestage generally extends from mid-December through June (RMT 2013). Although late fall-run Chinook salmon populations occur primarily in the Sacramento River, incidental observations of late fall-run Chinook salmon have been reported to occur in the lower Yuba River (RMT 2013).

Summary of Fall-run Chinook Salmon Status in the Lower Yuba River

Based on information and analyses presented in Appendix 9A, total annual escapement of fall-run Chinook salmon in the lower Yuba River ranged from 1,007 fish in 2007 to 11,181 fish in 2013 and averaged approximately 4,971 fish annually for the years when data were available from 2004-2023. Trend analyses in fall-run Chinook salmon abundance in the lower Yuba River utilizing updated data and information from 2004-2015, 2018, and 2020-2023 demonstrate that the abundance of fall-run Chinook salmon in the lower Yuba River has exhibited a slight although not statistically significant increase over the years examined. Similar to the results for spring-run Chinook salmon, the trend in the proportional contribution of adipose fin-clipped fish to the total annual run of fall-run Chinook salmon upstream of DPD has increased over time.

Summary of Factors Affecting Fall-run Chinook Salmon in the Lower Yuba River

The magnitude of many of the stressors/factors affecting fall-run Chinook salmon in the lower Yuba River under existing conditions are similar to those as characterized for spring-run Chinook salmon. Key stressors (i.e., identified as “medium to high” and “high” magnitudes) affecting fall-run Chinook in the lower Yuba River under existing conditions include the following.

- Englebright Dam – High
- Hatchery Effects – High

- The habitat area of particular concern (HAPC) of "Complex Channels and Floodplain Habitats" (represented by the combination of *Floodplain Habitat Connectivity & Availability* and *Natural River Morphology*) – Medium to High
- Riparian Habitat and Large Woody Material (LWM) – Medium to High

9.2.5.2.3 Steelhead

Based on VAKI Riverwatcher™ data at DPD extending from January 2004 through February 2022, the majority of upstream migration of adult steelhead extends from September through March. Most (>90%) of steelhead spawning occurs upstream of DPD, particularly in the Timbuctoo Bend and Parks Bar reaches (RMT 2013). In the lower Yuba River, juvenile steelhead exhibit variable durations of rearing, ranging from a few months to 3 years (RMT 2013). However, based on RST surveys and snorkel surveys, the majority of steelhead juveniles appear to leave the lower Yuba River as YOY during the spring to continue rearing in downstream areas. During RMT snorkel surveys in 2014, the vast majority of steelhead fry observed were located in the Timbuctoo Bend Reach, followed by the Englebright Dam Reach (RMT, unpublished data). Steelhead juvenile observations also were primarily in the Timbuctoo Bend and Englebright Dam reaches, with fewer observations in the remaining reaches.

Summary of Steelhead Status in the Lower Yuba River

Based on updated data and information presented in Appendix 9A, uncorrected VAKI Riverwatcher counts for the 11 biological years (2010/2011 through 2015/2016, 2017/2018, and 2018/2019 through 2022/2023) when annual time series of reliable counts are available indicate that counts of adult steelhead passing upstream of DPD ranged from 27 in 2015/2016 to 527 in 2010/2011, with an annual average of 200 individuals. Adult steelhead passage counts at DPD from 2018 through 2023 demonstrate an increase in the number of steelhead from prior years, with a marked increase in abundance during the 2020/2021 and 2021/2022 biological years. Overall, from 2010/11 – 2021/2022, annual counts of adult steelhead passage upstream of DPD are generally stable and exhibit a slight although not statistically significant increasing trend. Hatchery contribution to annual adult steelhead escapement upstream of DPD is a regular occurrence based on the observation of adipose fin-clipped adult steelhead passing through the VAKI Riverwatcher™ photogrammetric system at DPD.

Summary of Factors Affecting Steelhead in the Lower Yuba River

The relative magnitudes of factors/stressors affecting steelhead in the lower Yuba River under existing conditions are shown in Table **9.2-5**, based on information presented in Appendix 9A. Table 9.2-5 includes a comprehensive list of factors affecting the status of steelhead in the lower Yuba River under existing conditions, including factors which have no clear nexus to the Proposed Projects and occur outside of the Project Area, but are included simply in an effort to establish an understanding of the population's ability to withstand additional adverse effects potentially associated with the Proposed Projects or alternatives.

Table 9.2-5. Relative magnitudes of factors/stressors affecting lower Yuba River steelhead under existing conditions.

Steelhead Factor/Stressor	Present Factor/Stressor Magnitude
Passage Impediments/Barriers	
• Englebright Dam	High
• Daguerre Point Dam	High
Entrainment	
• South Yuba/Brophy	Low
• Hallwood-Cordua	Medium to High
• BVID	Low
Predation	Low to Medium
Poaching	Medium
Hatchery Effects	High
Spawning Habitat	Low
Narrows 1 and 2 Operations	Low
Redd Dewatering	Medium to High
Stranding and Isolation	
• Adults	Low
• Juveniles	Low to Medium
Harvest/Angling	Low
Natural River Morphology and Function	High
Riparian Habitat and LWM	Medium to High
Floodplain Habitat Connectivity & Availability	Low to Medium
Water Quality	Low
Water Temperature Suitability	Low
Aquatic Invasive Species	Low

9.2.5.2.4 Green Sturgeon

As described in Appendix 9A, limited information regarding green sturgeon distribution, movement, and behavioral patterns, as well as lifestage-specific habitat utilization preferences is available for the lower Yuba River. Over the course of annual sturgeon egg matt surveys in the DPD plunge pool starting in 2017, CDFW observed adult green sturgeon during June into early August and eggs were observed on June 15, 2018 (Beccio 2018). One early-stage juvenile green sturgeon (40 mm FL) was captured in an edgewater habitat about 200 m downstream of DPD on August 19, 2019 (Beccio 2019). During July of 2023, five early lifestage (24-28 mm) juvenile green sturgeon were caught during RST monitoring in the lower Yuba River downstream of DPD (C. Campos, pers. comm., July 25, 2023).

Based on the adult and egg observations during the egg matt surveys and juvenile observations, green sturgeon spawning and incubation may occur in the lower Yuba River below DPD during June through July. After hatching, larval green sturgeon may remain in the gravels for about

10-14 days before starting exogenous feeding and dispersal (NMFS 2016). The duration of green sturgeon juvenile rearing in the lower Yuba River before moving downstream is not known. Adult green sturgeon holding after spawning may continue into the following winter.

Current scientific information indicates that the Southern DPS of green sturgeon population has been relegated to a single, independent population, which principally spawns in the mainstem Sacramento River (NMFS 2021), but also may breed opportunistically in the lower Feather and Yuba rivers (NMFS 2016). Therefore, by contrast to spring-run Chinook salmon and steelhead, stressors identified for green sturgeon occurring in the lower Yuba River do not represent population-level stressors. There also is greater uncertainty in the identification of the relative magnitude of stressors affecting green sturgeon in the lower Yuba River relative to spring-run Chinook salmon and steelhead. Nonetheless, based on information presented in Appendix 9A, the following stressors (and associated relative magnitudes) have been identified for green sturgeon in the lower Yuba River under existing conditions for the purpose of evaluating whether and to what extent the Proposed Projects may influence these stressors.

- Passage Impediments/Barriers - Low
- Poaching - Medium
- Predation (eggs) – Low to Medium
- Water Temperature - Low

9.2.5.2.5 Pacific Lamprey and River Lamprey

Snorkel and electrofishing surveys have shown that Pacific lamprey is abundant and well distributed within the lower Yuba River (Yuba Water 2017; Yuba Water 2023a). River lampreys were consistently observed emigrating past the RST survey sites in the lower Yuba River between 1999 and 2010 (Yuba Water 2017). The adult migration into freshwater towards upstream spawning areas primarily begins between early March and late June (Moyle 2002). Pacific lampreys have been reported to spawn between March and July, depending on the location (USFWS 2010), which indicates that eggs could be incubating as late as August. Following ammocoete metamorphosis, downstream migration coincides with high flow events in late winter and early spring (Moyle 2002). Juvenile Pacific lamprey downstream migration has occurred throughout the year in the lower Yuba River with the peak of migration occurring between December and February (Yuba Water 2017).

9.2.5.2.6 Central California Roach

Central California roach life history information is summarized above under Section 9.2.5.1. Central California roach have been documented during RST monitoring on the lower Yuba River (RMT 2013). More recently, there have been no observations of roach in the VAKI Riverwatcher™ fish monitoring system at Daguerre Point Dam from 2015 through February 2022. During the RMT 2012, 2014 and 2015 snorkel surveys, 20 juvenile roach were identified (RMT, unpublished data). Spawning reportedly occurs from March through early July, typically initiating after water temperatures reach approximately 61°F (Moyle 2002).

9.2.5.2.7 Hardhead

Hardhead life history information is summarized above under Section 9.2.5.1. Adult and juvenile hardhead have been documented in the lower Yuba River downstream of Englebright Dam during various surveys conducted since the late 1980s (reviewed by Yuba Water 2017). Juvenile hardhead were routinely collected during juvenile salmon emigration studies on the Yuba River between 1999 and 2009 (Yuba Water 2017; RMT 2013). However, only a few hardhead were observed during the RMT's 2012, 2014 and 2015 snorkel surveys (RMT, unpublished data). More recently, hardhead have been recorded annually in the VAKI Riverwatcher™ fish monitoring system at DPD from 2015 through February 2022. Hardhead spawning occurs during the spring when hardhead migrate upstream to gravel riffles, often within tributary streams (Moyle 2002). This upstream migration behavior by spawning adult hardhead is supported by the VAKI Riverwatcher™ data at DPD, which show adult hardhead moving upstream during primarily April through June, and juvenile hardhead moving downstream between April and August (particularly during June) (Yuba Water 2021).

9.2.5.2.8 White Sturgeon

Insufficient information is available to characterize white sturgeon life history in the lower Yuba River. However, adult white sturgeon have reportedly been observed in the lower Yuba River downstream of DPD (Beccio 2019). White sturgeon primarily spawn in a short reach of the middle Sacramento River between Knights Landing and Colusa (Schaffter 1997), although some spawning also occurs in tributaries including the Feather River (DWR 2022). Spawning adults likely migrate upstream to the lower reaches of the Sacramento River during winter in response to higher flows (Schaffter 1997), but may be migrating between fall and spring (DWR 2022). Adults spawn from February to June and return to the Delta after spawning (Schaffter 1997). The early life history of white sturgeon is not well understood, but current evidence indicates that dispersed, fertilized eggs settle to the bottom of the river and stick to hard surfaces. Eggs hatch into the larval stage after about 12 days. The newly hatched larvae swim actively for several days before settling to the bottom of the channel. Juveniles move rapidly down-river during their first year, taking up residence in the freshwater region of the estuary (CDFW 2022).

Although white sturgeon adults have been reportedly observed in the lower Yuba River, white sturgeon was not a focal species of evaluation by the YRDP Relicensing Participants (including NMFS, CDFW, USFWS and USFS) in the lower Yuba River, and are not known to spawn in the lower Yuba River. Nonetheless, because adult white sturgeon have been observed in the lower Feather River during spring and summer months (Seesholtz et al. 2016), this DEIR assumes that adult white sturgeon may have the potential to occur in the lower Yuba River downstream of DPD during various times of the year.

9.2.5.2.9 Striped Bass and American Shad

Although not species of focal evaluation, non-native striped bass and American shad are considered in this analysis as appropriate given their status as commercially and recreationally important fish species.

CDFG (1991) reported that striped bass are unable to access the lower Yuba River upstream of DPD, but they have occasionally accessed the fish ladders at DPD and have been identified in the lower Yuba River downstream of DPD during snorkel surveys and other fisheries studies (RMT 2013). However, striped bass were not observed in the lower Yuba River during the most recent snorkel surveys conducted during 2012, 2014 and 2015 (RMT, unpublished data). Spawning and initial rearing could occur in the lower Yuba River during April through June. Striped bass spawn in water temperatures ranging from about 59 to 68°F, and can tolerate temperatures up to 77°F or higher (Moyle 2002).

In 2018, American shad eggs were collected from several of the egg mats placed below DPD as part of CDFW's sturgeon spawning study (Beccio 2018). American shad have primarily been observed downstream of DPD during snorkel and RST surveys, but also have been observed accessing the fish ladders at DPD (RMT 2013). American shad were not observed in the lower Yuba River during the most recent snorkel surveys conducted during 2012, 2014 and 2015 (RMT, unpublished data). Spawning and initial rearing could occur in the lower Yuba River during April through June. American shad are reported to spawn at water temperatures ranging from about 46 to 79°F (USFWS 1967).

9.2.5.3 Areas Downstream of the Lower Yuba River

Areas downstream of the lower Yuba River include the Feather River downstream of the lower Yuba River, the Sacramento River downstream of the confluence with the lower Feather River and the Delta. Fish species of management concern in areas downstream of the lower Yuba River include the same fish species addressed in the lower Yuba River, in addition to Sacramento River winter-run Chinook salmon, Sacramento splittail, and Delta fish species (delta smelt, longfin smelt, starry flounder). Most anadromous salmonid, and green and white sturgeon, spawning occurs upstream of the lower Yuba River confluence within the Feather River and upstream of the lower Feather River confluence within the Sacramento River. Because the Feather River downstream of the Yuba River and the Sacramento River downstream of the Feather River primarily serve as migratory corridors, the primary lifestages in these reaches considered in this DEIR include the adult and juvenile migratory (and transient rearing) lifestages for all runs of Chinook salmon, steelhead, and Pacific lamprey, and the migration and rearing lifestages of green sturgeon and white sturgeon, Sacramento splittail, American shad and striped bass. All relevant lifestages of Delta fish species (delta smelt, longfin smelt, starry flounder) are evaluated for the Proposed Projects and alternatives.

9.3 Regulatory Setting

The Federal, State, and local plans, policies, regulations, and laws discussed in this DEIR are relevant to the Proposed Projects and alternatives. Other environmental laws not relevant to the Proposed Projects and alternatives are not discussed.

9.3.1 Federal Plans, Policies, Regulations, and Laws

9.3.1.1 Endangered Species Act

Under the Endangered Species Act (ESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 U.S.C. Section 1533(c)). Pursuant to ESA requirements, a Federal agency proposing to implement or approve a project within its jurisdiction must determine whether any Federally listed threatened or endangered species may be present in the project area and determine whether the project would result in "take" of any such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 U.S.C. Sections 1536(3), (4)). Section 7 of the ESA provides a means for authorizing incidental take of Federally endangered or threatened species that result from Federally conducted, permitted, or funded projects. Similarly, Section 10 authorizes incidental take of Federally endangered or threatened species that result from non-Federal projects.

9.3.1.1.1 Critical Habitat Designations

The ESA also requires the designation of "critical habitat" for listed species. "Critical habitat" is defined as: (1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by the species at the time it is listed if the agency determines that the area itself is essential for conservation of the species (16 USC §1532(5)(a) and is capable of being occupied by the species (*Weyerhaeuser Co. v. United States Fish & Wildlife Serv.*, 139 S. Ct. 361, 368 (2018) (only "habitat" of an endangered species is eligible for designation as "critical habitat.")). As discussed above, critical habitat has been designated for spring-run Chinook salmon, steelhead, and green sturgeon in the lower Yuba River.

9.3.1.1.2 National Marine Fisheries Service Recovery Planning for Salmon, Steelhead, and Green Sturgeon in California

In the Central Valley, NMFS is responsible for facilitating the development of recovery plans for the following species addressed in this analysis:

- Central Valley Spring-run Chinook Salmon ESU
- Central Valley Steelhead DPS
- Southern DPS of North American Green Sturgeon

The NMFS (2014) recovery plan describes the steps, strategy, and actions recommended to return spring-run Chinook salmon and steelhead to viable status in the Central Valley, with the goal of ensuring their long-term persistence and evolutionary potential. For the Central Valley Chinook salmon ESUs and the steelhead DPS to achieve recovery, the recovery strategy is focused on two principles: (1) functioning, diverse, and interconnected habitats are necessary for a species to be viable; and (2) species viability is determined by spatial structure, diversity, productivity, and

abundance. In 2018, NMFS completed a recovery plan for the Southern DPS of North American green sturgeon. To achieve delisting, the objective of the recovery plan is to increase green sturgeon abundance, distribution, productivity, and diversity by alleviating significant threats to the species, including blockage of access to spawning habitat in the Sacramento River, critical flow and water temperature patterns, harvest and poaching rates, entrainment, invasive species, exposure to contaminants, and loss of habitat and related estuarine/Delta function (NMFS 2018).

9.3.1.1.3 Pacific Lamprey Conservation Initiative

USFWS' strategy to improve the status of lampreys is carried out through the Pacific Lamprey Conservation Initiative (PLCI), which promotes implementation of conservation measures for Pacific Lamprey across their range. The PLCI includes an assessment of Pacific lamprey, a Conservation Agreement (USFWS 2022); and Regional Implementation Plans (RIPs). As described in USFWS (2022), for the purpose of implementing conservation actions, Pacific Lamprey distribution has been divided into 18 Regional Management Units (RMUs). Each of these RMUs includes several 4th level Hydrologic Unit Codes, which are the finer scale geographic units used to evaluate lamprey status, threats, and conservation needs. The Fisheries Project Area for this DEIR includes areas of the Sacramento RMU, including the lower Yuba River, lower Feather River downstream of the lower Yuba River, Sacramento River downstream of the lower Feather River, and the Delta.

The RIP for the Sacramento RMU (Boyce et al. 2022) includes status and distribution of Pacific lamprey in the Sacramento River Watershed, identifies threats and limiting factors to Pacific lamprey in the Sacramento RMU, and includes an implementation plan that identifies conservation efforts, knowledge gaps and implementation projects that will reduce risks to Pacific lamprey within the Sacramento RMU and its component watersheds. The principal implementation projects for the lower Yuba River include ensuring passage at DPD and evaluation of rearing habitat availability caused by sediment removal at the upstream dams and legacy mining impacts resulting in lack of fine sediment (Boyce et al. 2022). The primary concern in the lower Yuba River is limited fine sediments suitable for ammocoete rearing, particularly at the upstream reaches of the lower Yuba River (Boyce et al. 2022).

9.3.1.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation Management Act, as amended by the Sustainable Fisheries Act (Public Law 104-297), was enacted primarily to establish a management system for conserving and managing commercial fisheries within the 200-mile Federal waters boundary of the U.S. The act also requires that all Federal agencies consult with NMFS on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect EFH of commercially managed marine and anadromous fish species. EFH includes specifically identified waters and substrate necessary for fish spawning, breeding, feeding, or growing to maturity. EFH also includes all habitats necessary to allow the production of commercially valuable aquatic species, to support a long-term sustainable fishery, and to contribute to a healthy ecosystem (16 U.S.C. Section 1802(10)). Because EFH only applies to commercial fisheries, all Chinook salmon habitats are included, but not steelhead habitat.

Freshwater EFH for Pacific salmon (e.g., spring-run Chinook salmon and fall-/late fall-run Chinook salmon) includes waters currently or historically accessible to salmon within the Central Valley ecosystems, as described by Myers et al. (1998). In the Yuba River Watershed, potential project-related effects having the potential to affect EFH are limited to three geographic areas: (1) North Yuba River; (2) Yuba River upstream of Englebright Reservoir; and (3) lower Yuba River, as described below.

- **North Yuba River**. PFMC (2014) has designated Chinook salmon EFH "*To Salmon Creek, near Sierra City*."
    - *Reservoir* – Approximately 15.5 miles of the North Yuba River canyon from the NMWSE of the Reservoir at RM 17.8 to the Dam at RM 2.3.
    - *Dam Reach* – Approximately 2.3 miles of the North Yuba River from the New Bullards Bar Minimum Flow Release Powerhouse at RM 2.3 to the confluence of the North Yuba River with the Middle Yuba River at RM 0.0.
- **Upper Yuba River**. Although no Chinook salmon are present upstream of Englebright Dam, nor have they been present upstream of Englebright Dam since its construction in 1941, the following reaches are contained within designated EFH.
    - *Middle/North Yuba River Reach* – Approximately 5.8 miles of the Yuba River from the confluence of the North Yuba River and the Middle Yuba River at RM 40.0 to the New Colgate Powerhouse at RM 34.2.
    - *New Colgate Powerhouse Reach* – Approximately 2 miles of the Yuba River from New Colgate Powerhouse at RM 34.2 to the normal maximum water surface elevation of the USACE's Englebright Reservoir.
    - *Englebright Reservoir* – Approximately 7.9 miles of the Yuba River from the normal maximum water surface elevation of Englebright Reservoir at RM 32.2 to Englebright Dam at RM 24.3.
- **Lower Yuba River**. EFH is designated for the entire lower Yuba River starting at Englebright Dam extending downstream to the confluence with the Feather River.

9.3.1.3 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 U.S.C. Sections 661, et seq.) provides that fish and wildlife resources receive equal consideration with other features throughout the planning process of water resources development projects. The act requires consultation with USFWS, NMFS, and State fish and wildlife agencies where the waters of any stream or other body of water are proposed, authorized, permitted, or licensed to be impounded, diverted, or otherwise controlled or modified under a Federal permit or license. Consultation is undertaken for the purpose of preventing loss of and damage to wildlife resources. The project proponents are required to consider the recommendations of the consultation, but implementation of them is not mandated.

9.3.2 State Plans, Policies, Regulations, and Laws

9.3.2.1 California Endangered Species Act

Under the California Environmental Species Act (CESA, CFGC Sections 2050, et seq.), CDFW has the responsibility for maintaining a list of threatened and endangered species designated under State law (see FGC Section 2070). Pursuant to CESA requirements, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project area and determine whether the proposed project would result in take of any such species. Under CESA, "take" is defined as the action of or attempt to "pursue, hunt, shoot, capture, collect, or kill." CDFW may authorize the incidental take of a State-listed species under Section 2081 of the CFGC. For species that are listed as threatened or endangered under both ESA and CESA, and for which an incidental take permit has been issued in accordance with Section 7 or Section 10 of the ESA, CDFW may authorize take after certifying that the Federal incidental take permit is consistent with CESA, pursuant to Section 2080.1 of the CFGC.

9.3.2.2 California Fish and Game Code

9.3.2.2.1 Rivers, Lakes, and Streams

Under CFGC Section 1602, it is unlawful for any entity to substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or to deposit or dispose of debris, waste, or other material where it may pass into any river, stream, or lake, without first notifying CDFW of such activity and obtaining an agreement authorizing the activity.

9.3.2.2.2 Dams and Obstructions

Section 5937 of the CFGC requires the owner of any dam to allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam. During the minimum flow of water in any river or stream, permission may be granted by CDFW to the owner of any dam to allow sufficient water to pass through a culvert, waste gate, or over or around the dam, to keep in good condition any fish that may be planted or exist below the dam, when, in the judgment of CDFW, it is impracticable or detrimental to the owner to pass the water through the fishway.

9.3.2.3 California Environmental Quality Act Guidelines

Pursuant to State of California Environmental Quality Act (CEQA) Guidelines Section 15380, CEQA requires consideration of potential impacts not only to species that are listed Federally or by the State but also to species that are not listed but may be considered rare, threatened, or endangered. Accordingly, "A species not included in any listing identified in subdivision (c) [ESA and CESA listed species] shall nevertheless be considered to be endangered, rare or threatened, if the species can be shown to meet the criteria in subdivision (b)" (State CEQA Guidelines Section 15380(d)).

The CEQA provision requires the lead agency to consider potential impacts to a species even when the respective government agencies have not had an opportunity to determine whether the species' status warrants listing. To assess "impact significance" to populations of non-listed species as well as listed species, CDFW recommends that the lead agency consider population-level effects, proportion of the taxon's range affected by a project, regional effects, and impacts to habitat features.

9.3.2.4 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code Sections 13000, et seq.) requires that each of the State's nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to protect wetlands by establishing water quality objectives. RWQCB jurisdiction includes both Federally protected waters and areas that meet the definition of "waters of the State." Waters of the State include all surface water and groundwater, including saline waters, within the State's boundaries. The RWQCBs have discretion to take jurisdiction over areas not Federally regulated under Section 401, provided they meet the definition of waters of the State. Mitigation requiring no net loss of wetlands functions and values of waters of the State is typically required by RWQCB.

9.3.3 Regional/Local Plans, Policies, Regulations, and Ordinances

9.3.3.1 Yuba County 2030 General Plan

Most of the policies included in the Natural Resources Element of the Yuba County 2030 General Plan (Yuba County 2011) apply exclusively to development projects. However, the following policy addressed public investments and therefore applies to the proposed project:

- **Policy NR 5.7**. New developments and public investments near Yuba County's streams and rivers shall be designed to avoid tree removal, erosion, or other modifications that would adversely affect salmonid habitat.

9.3.3.2 Yuba County Municipal Code

Chapter 11.44 of the Yuba County Municipal Code includes a section addressing protection of natural resources. However, this chapter focuses on design of subdivisions, connections between subdivisions, and adjacent uses and developments. Therefore, it does not apply to this project.

9.3.4 Habitat Conservation Plans

There are no adopted habitat conservation plans (HCPs) or California Natural Community Conservation plans (NCCPs) within the Fisheries Project Area, except for the Yolo County HCP/NCCP which encompasses a portion of the lower Sacramento River and Delta. Although the Yolo County HCP/NCCP does not directly address fish species, it does include goals and policies related to protecting and improving habitat conditions in the Yolo Bypass, which could indirectly benefit fish resources (Yolo Habitat Conservancy 2017).

9.4 Impact Assessment Methodology

This section describes the impact assessment methodology, impact indicators, and significance criteria used by Yuba Water to evaluate the effects of the Proposed Projects and alternatives on fisheries and aquatic habitat compared to the bases of comparison.

9.4.1 Construction-Related Impacts

9.4.1.1 Areas Upstream of Englebright Dam

As described in Chapter 2, Yuba Water's Proposed Projects include seven general changes to existing YRDP facilities, including: (1) modification to the OHDD fish release outlet; (2) modification to the LCDD fish release outlet; (3) modification to the Lohman Ridge Diversion Tunnel Intake; (4) modifications to recreation facilities at NBBR; (5) addition of a tailwater depression system at New Colgate Powerhouse; (6) addition of a new auxiliary flood control outlet (aka ARC Spillway) at NBBR; and (7) modifications to YRDP roads. No construction activities would occur under the Narrows Project.

Chapter 2 summarizes the YRDP proposed construction activities and provides general information about the proposed schedule for construction of key facilities to provide an understanding of the estimated overall 1- to 20-year facility construction period. Exhibit C of Yuba Water's 2017 AFLA (see Appendix 2A of this DEIR) describes Yuba Water's construction methods and schedule for the above changes, with the exception of recreation facilities and roads. The construction schedules (including sequencing and duration) for recreation facilities and for roads are described in Yuba Water's proposed Condition RR1 (Implement Recreation Facilities Plan) and proposed Condition LU1 (Implement Transportation System Management Plan), which are included in Appendix 2B of this DEIR. Where available and appropriate, resource impact analyses use the detailed construction schedule and sequencing information available to estimate potential impacts (e.g., air quality).

Recreation-related construction activities are scheduled to extend over the duration of the new FERC license, and the implementation schedule for the major rehabilitation and improvements at each existing recreation facility (covering new License Years 1 through 20) is described in proposed Condition RR1 (Implement Recreation Facilities Plan) (see Appendix 2B). The implementation schedule for new recreation facilities (i.e., improvements) also is described in the Recreation Plan. As shown in the implementation schedule, construction work at individual recreation facilities is generally planned to be conducted in phases (e.g., License Year 1, License Years 6-10, License Years 10-15, etc.). The majority of work on National Forest System (NFS) lands will occur within the first eleven years of the new license, with some work on Yuba Water facilities occurring during License Years 14 through 20. After Year 20, the need for replacement and/or redevelopment of facilities will be discussed and determined at annual coordination meetings with the USFS, as described in the Recreation Plan (Yuba Water 2022a).

Potential impacts to fisheries resources associated with construction activities were evaluated based on the following considerations. Potential construction-related impacts evaluated include: (1) physical disturbance; (2) release and exposure of sediments and turbidity; (3) noise, motion and vibration disturbance; (4) disturbance of aquatic habitat including riparian vegetation; (5)

release and exposure of construction-related contaminants; and (6) isolation/dewatering and fish relocation activities. The potential for pre-construction and construction-related impacts to affect fisheries and aquatic resources is dependent on the location and type of activity or construction and the potential for these activities to directly harm individuals and/or remove, damage, or alter onsite habitat conditions within and adjacent to the construction footprints for a given alternative.

The impact assessment took into consideration the potential for construction activities to affect a particular fish species or lifestage that may be present in or adjacent to the project activity. Depending on the specific activity evaluated, the impact assessment considered either all, or a combination of, the elements listed below, as feasible and appropriate:

- Review of available maps and aerial imagery to determine the proximity of permanent and temporary construction features to the lower Yuba River.
- Evaluation of the timing, extent (e.g., long-term or short-term duration), and severity of disturbance activities resulting from construction-related activities and the use of construction equipment.
- Determination if there is a potential for construction activities to adversely modify habitat or appreciably diminish the value of critical habitat.
- Identification of protection measures to minimize or mitigate for potential construction-related impacts on sensitive life stages of fish species that may be present during construction activities.

9.4.1.2 Lower Yuba River

As described in Chapter 2, Yuba Water's Proposed Projects includes changes to existing YRDP facilities located upstream of Englebright Reservoir. No construction activities would occur adjacent to or within the lower Yuba River. Although adverse effects to fish species in the lower Yuba River are not expected due to construction activities in the upper Yuba River Watershed, the same considerations identified above were applied to the lower Yuba River. No construction activities would occur under the Narrows Project.

9.4.2 Operations-Related Impacts

Changes to operations that could affect fisheries resources in the YRDP reaches and reservoirs upstream of Englebright Dam, reaches of the lower Yuba River, and areas downstream of the lower Yuba River are due to changes in YRDP operations that would occur under the Proposed Projects

and alternatives[4]. As described in Chapter 2, no substantial changes in Narrows Project operations would occur under the Proposed Projects or alternatives. Operations-related impacts to fisheries resources under the Narrows Project are only due to license conditions/implementation plans. Consequently, operations-related fisheries impacts evaluated for the YRDP and Narrows Project include the following.

YRDP

- Areas Upstream of Englebright Dam
    - Quantitative changes in simulated habitat conditions (flow-dependent habitat availability, water temperature suitability)
    - Quantitative and/or qualitative changes to fisheries resources associated with operations or additional operations-related activities
        - Reservoir operations
            - Warmwater and coldwater fisheries in New Bullards Bar and Englebright reservoirs
            - Fish access to NBBR tributaries
            - Entrainment into project intakes
        - Spills at project dams
        - Powerhouse operations
        - Diversion dam operations
        - License implementation plans
- Lower Yuba River
    - Quantitative changes in simulated habitat conditions (flow-dependent habitat availability, water temperature suitability)
    - Quantitative and/or qualitative changes to fisheries resources associated with operations or additional operations-related activities

[4] As described in Chapter 4, Yuba Water's proposed ARC Spillway was fully analyzed in a separate environmental review process, which included preparation of a Draft EIR and Final EIR, which has been certified by Yuba Water with issuance of a Notice of Determination. For completeness, this DEIR evaluates operations of the ARC Spillway as part of the YRDP Proposed Projects (and Alternatives) because: (1) it was included as part of Yuba Water's proposed (2017) AFLA; (2) it was included as part of the FERC Staff Alternative that was evaluated in FERC's (2019) FEIS; and (3) the ARC Spillway facilities and operations will be included as part of the new license for the YRDP that is issued by FERC. Yuba Water previously analyzed the potential fisheries impacts of operating the ARC Spillway in the ARC Spillway EIR and determined that there would be less-than-significant impacts to fisheries resources from use of the spillway (Yuba Water 2024). The analysis of those potential impacts in the ARC Spillway EIR is incorporated by reference. Based on the minor flow and water temperature differences between operation of the YRDP under the Existing Condition with and without ARC Spillway (Yuba Water 2024), and the impact analyses described in the following sections, ARC Spillway operations under the YRDP Relicensing Project (and Alternatives) would not result in any new or more severe potentially significant impacts compared to the impacts under the existing YRDP FERC license identified in the ARC Spillway EIR.

        - Powerhouse operations
        - License implementation plans
- Areas Downstream of the Lower Yuba River
    - Quantitatively-informed qualitative changes in simulated habitat conditions in areas downstream of the lower Yuba River

The programmatic analysis of indirect operations-related impacts evaluated in reaches and reservoirs upstream of the YRDP in the Middle Yuba River and South Yuba River watersheds, which could occur as a result of YB/DS operations under Alternative 1, includes review and application of hydrological simulations to address fisheries habitat conditions.

Narrows Project

- Quantitative and/or qualitative changes to fisheries resources associated with operations or additional operations-related activities
    - License implementation plans

9.4.2.1 Hydrology, Water Temperature and Habitat Modeling

Fisheries resources impact assessment methodologies include evaluation of simulated changes in hydrology, water temperature, and fisheries habitat under the Proposed Projects and alternative scenarios relative to the bases of comparison. Modeled flows are used to quantify flow-dependent habitat availability for multiple species and lifestages. Modeled flow-related outputs corresponding to species-specific lifestages for the above variables are presented as averages over the entire simulation period, as averages by water year type (WYT), and as cumulative probability exceedance (habitat duration) distributions. Modeled water temperatures are used in conjunction with species and lifestage-specific water temperature index values to assess site-specific water temperature suitability.

Models developed for planning and impact-assessment purposes represent the best available information with which to conduct evaluations of the Proposed Projects and alternatives on fisheries and aquatic resources in the project area. Moreover, modeling assumptions and results are used for comparative purposes rather than for absolute predictions. The focus of the analyses based on hydrologic and water temperature model output is on the differences in the results among comparative scenarios.

9.4.2.1.1 Operations (Hydrology) and Water Temperature Modeling

As described in Chapter 4, model scenarios were simulated using hydrologic, hydraulic and water temperature modeling over a 52-year period of record (WY 1970-2021) to evaluate potential flow- and water temperature-related changes under the Proposed Projects and each alternative scenario relative to a basis of comparison.

Operations modeling was conducted using an updated version of Yuba Water's Yuba River Development Project Model (YRDPM) to simulate hydrology in the lower Yuba River, upstream YRDP reservoirs, and upstream YRDP-influenced streams associated with operations of the

YRDP. The YRDPM simulates operations on a daily time-step. Potential impacts are assessed based on model results from Yuba Water's YRDPM. More information about the YRDPM, including assumptions, inputs, and model limitations, are provided in Appendix 5A, Yuba River Development Project Water Operations Model Technical Memorandum.

Yuba Water's analysis also utilized the "Mini-Model" described in Appendix 5E, Upstream Projects Mini-Model Technical Memorandum, to simulate operations of NID's and PG&E's YB/DS projects under various regulatory regimes including their existing and proposed FERC license requirements and the alternatives evaluated in this DEIR. Yuba Water developed the Mini-Model to provide a reasonable representation of inflows to the YRDP and Narrows Project for use in the YRDPM to characterize flow and water temperature regimes for impact assessment purposes in the YRDP Project Area.

Simulated daily flows and storages output from the YRDPM were used as inputs to the water temperature model. The water temperature model applied in this evaluation is an updated version of the Yuba River Watershed water temperature model developed by Yuba Water (2017), which simulates daily water temperatures for a period of record matching that of the updated YRDPM (WY 1970 through 2021). Detailed information about the water temperature model is provided in Appendix 5B, Yuba River Development Project Water Temperature Model Technical Memorandum.

9.4.2.1.2 Hydraulic and Habitat Modeling

YRDP Reaches Upstream of Englebright Dam

Yuba Water (2013f) describes the habitat modeling methodologies applied to the upper Yuba River Watershed reaches. During 2011-2013, Yuba Water conducted instream flow studies in one study reach of the North Yuba River, two sub-reaches of Oregon Creek, two reaches of the Middle Yuba River, and two reaches of the upper Yuba River. Eleven study sites were identified across the reaches, and between seven and 21 transects were placed in each site for a total of 132 transects. Studies were designed to ensure each mesohabitat was represented at least twice and were representative of their proportion within reaches or sub-reaches, with the exception of rarely occurring mesohabitat types. Yuba Water used the one-dimensional PHABSIM (Physical Habitat Simulation) method to model indices of fish habitat in each reach at specific flow rates. As described in Yuba Water (2013f), indices of fish habitat (weighted usable area, or WUA), were defined as the sum of stream surface area within a reach or sub-reach, weighted by multiplying this area by a composite habitat suitability index based on application of habitat suitability criteria (HSC) for several variables (water depth, water velocity, and substrate or cover), which range in value from 0.0 to 1.0. Resultant WUA values for specific flow rates were normalized to square units (i.e., either in feet or meters) per 1,000 linear stream units. As agreed upon by Yuba Water and YRDP Relicensing Participants, HSC developed for rivers in Nevada Irrigation District's Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and PG&E's Drum-Spaulding Project (FERC Project No. 2310) relicensings were used for the target species (Yuba Water 2013f).

This DEIR utilizes habitat modeling that was carried out for the YRDP FERC relicensing in the following reaches and sub-reaches.

- Middle Yuba River
    - Our House Diversion Dam Reach
    - Oregon Creek Reach
- Oregon Creek
    - Log Cabin Sub-Reach
    - Celestial Valley Sub-Reach
- North Yuba River
    - New Bullards Bar Dam Reach
- Upper Yuba River
    - Middle/North Yuba River Reach
    - New Colgate Powerhouse Reach

Using PHABSIM, WUA-flow relationships were developed for four target fish species and seven lifestages, including spawning, juvenile and adult life stages of rainbow trout, juvenile and adult lifestages of Sacramento sucker, and juvenile and adult lifestages for the hardhead/Sacramento pikeminnow guild (Yuba Water 2013f).

YB/DS Reaches Upstream of the YRDP

For the programmatic analysis of upstream indirect impacts resulting from YB/DS operations under Alternative 1, this DEIR also utilizes habitat-flow relationships developed by NID and PG&E (2010) for the following YB/DS reaches upstream of the YRDP (see Figure 9.2-1).

- Middle Yuba River
    - Jackson Meadows Dam Reach (Jackson Meadows Dam downstream to Milton Diversion Dam)
    - Milton Diversion Dam Reach (Milton Diversion Dam downstream to OHDD)
        - Upper Milton Sub-Reach
        - Wolf Sub-Reach
        - Kanaka Sub-Reach
- Canyon Creek
    - Bowman-Spaulding Diversion Dam Reach (Bowman-Spaulding Diversion Dam downstream to the South Yuba River)
- Fordyce Creek
    - Fordyce Lake Dam Reach (Fordyce Dam downstream to Lake Spaulding)
- South Yuba River
    - Lake Spaulding Reach (Lake Spaulding Dam downstream to Englebright Reservoir)
        - Jordan Creek Sub-Reach
        - Canyon Creek Sub-Reach
        - Poorman Creek Sub-Reach
        - Humbug Creek Sub-Reach

Using PHABSIM, WUA-flow relationships were developed for several lifestages of four target fish species, including spawning, fry, juvenile and adult life stages of rainbow trout, juvenile and adult life stages of Sacramento sucker, and juvenile and adult lifestages for the hardhead/Sacramento pikeminnow guild (NID and PG&E 2010). Although WUA-flow relationships for the rainbow trout fry lifestage were developed, the adult and spawning lifestages were targeted for improvement by YB/DS Relicensing Participants (FERC 2014). Additionally, YRDP Relicensing Participants considered the YB/DS rainbow trout fry modeling results atypical and therefore did not apply the YB/DS rainbow trout fry habitat modeling to the YRDP reaches (Yuba Water 2013f). Consequently, the programmatic evaluation of indirect impacts to rainbow trout in reaches upstream of the YRDP focuses on the spawning, adult, and juvenile lifestages.

Lower Yuba River

Water velocities and water depths in the lower Yuba River were simulated by using a TUFLOW 2D hydrodynamic model of the lower Yuba River using a 2017 digital elevation model (DEM). The 2017 DEM was developed subsequent to high flows that occurred during winter of 2017 using Airborne Light Detection and Ranging (LiDAR), boat-based multibeam and single beam echosounding, and ground-based topographic surveying with Real-time kinematic (RTK) Global Positioning System (GPS) and robotic total stationing (Silva and Pasternack 2018). The 2D model was run with a 3'x3' computation mesh for flows ≤ 30,000 cfs and a 10'x10' mesh for flows >30,000 cfs. Water velocity, water depth, water surface elevation, shear stress and other variables were produced for discharges from 300 cfs to 110,400 cfs for the lower Yuba River downstream of Daguerre Point Dam, and for discharges from 300 cfs to 198,885 cfs upstream of Daguerre Point Dam.

Species and lifestage-specific habitat-flow relationships for the lower Yuba River were developed by applying HSC to modeled water depths and velocities and substrate (for spawning lifestages) and cover (for juvenile lifestages) data. Habitat-flow relationships for each species/lifestage were developed to encompass the entire range of flows across all model scenarios over the entire simulation period. Appendix 9B provides a detailed description of the development of the habitat-flow relationships for the lower Yuba River applied in this evaluation.

9.4.2.2 Model Output Application and Fisheries Analytical Approach

Yuba Water utilized post-processed model output results to determine whether, and to what degree, each alternative scenario would provide a substantive benefit to fish species of management concern, and whether the alternative scenario would result in re-directed adverse impacts to fish species relative to the basis of comparison. Yuba Water's analysis included evaluation of both physical habitat availabilities and water temperature suitabilities for multiple lifestages of species of management concern in areas upstream of Englebright Dam and in the lower Yuba River within the Project Area, as detailed below.

9.4.2.2.1 Flow-Dependent Habitat Availability

Flow-dependent habitat availability refers to the quantity (area) of habitat available to individual species and lifestages at a particular flow rate. Flow-dependent habitat availability is quantified by applying modeled daily flows to habitat-discharge relationships to produce daily amounts of

habitat for a particular species/lifestage. Flow-dependent habitat availability was quantified and evaluated for species and lifestages for which site-specific HSC were developed, or using HSC derived from the literature, and were applied to the areas upstream of Englebright Dam and the lower Yuba River during the YRDP FERC relicensing (Yuba Water 2017).

This impact assessment compares the long-term average habitat availability over the entire simulation period and average habitat availability by WYT[5] under comparative model scenarios. Due to the potential masking effect of comparing average values, this impact assessment also includes habitat duration analyses (or probability of exceedance distributions). A habitat duration curve is constructed in the same way as a flow duration curve but uses habitat values instead of discharge as the ordered data. The habitat duration curve shows the percentage of time a particular habitat value is exceeded over a specific period of evaluation (i.e., a lifestage-specific time period or a season within a year-round lifestage period).

YRDP Reaches Upstream of Englebright Dam

Flow-dependent habitat availability evaluations were conducted for rainbow trout and Sacramento sucker lifestages in all YRDP reaches (identified below). Consistent with Yuba Water (2013f), hardhead/pikeminnow habitat evaluations were conducted for the North Yuba River and upper Yuba River reaches. Habitat for juvenile and adult lifestages of rainbow trout, Sacramento sucker and hardhead/pikeminnow were evaluated year-round, and rainbow trout spawning habitat is evaluated during April through June. Rainbow trout fry were excluded from YRDP habitat modeling due to atypical modeling results (Yuba Water 2013f). Habitat (WUA) duration analyses were conducted for this DEIR by applying modeled daily flows to the previously-developed WUA-flow relationships using the following hydrologic model nodes for each habitat reach (Figure 9.4-1). Modeled daily flows across all scenarios were encompassed by the range of flows in the Yuba Water (2013f) WUA-flow relationships, except for the Oregon Creek above Middle Yuba River node, which exceeded the WUA-flow relationship flow range during 1 day under some scenarios.

- North Yuba River
    - New Bullards Bar Dam Reach
        - North Yuba River below NBBD (RM 2.3)
- Oregon Creek
    - Log Cabin Diversion Dam Sub-Reach
        - Oregon Creek below LCDD (RM 4.3)
        - Oregon Creek midway between Celestial Valley and Middle Yuba River (RM 1.0) [Oregon Creek above Middle Yuba River]
    - Celestial Valley Sub-Reach
        - Oregon Creek at Celestial Valley (RM 2.5)
- Middle Yuba River (reaches downstream of OHDD)
    - Our House Diversion Dam Reach
        - Middle Yuba River below OHDD (RM 12.6)

[5] WYTs are defined by the Smartsville Index.

        - Middle Yuba River midway between OHDD and Oregon Creek (RM 8.8)
    - Oregon Creek Reach
        - Middle Yuba River midway between Oregon Creek and North Yuba River (RM 2.3)

- Upper Yuba River
    - Middle/North Yuba River Reach
        - Upper Yuba River midway between Middle Yuba River and New Colgate Powerhouse (RM 37.1)
    - New Colgate Powerhouse Reach
        - Upper Yuba River below New Colgate Powerhouse (RM 34.2)

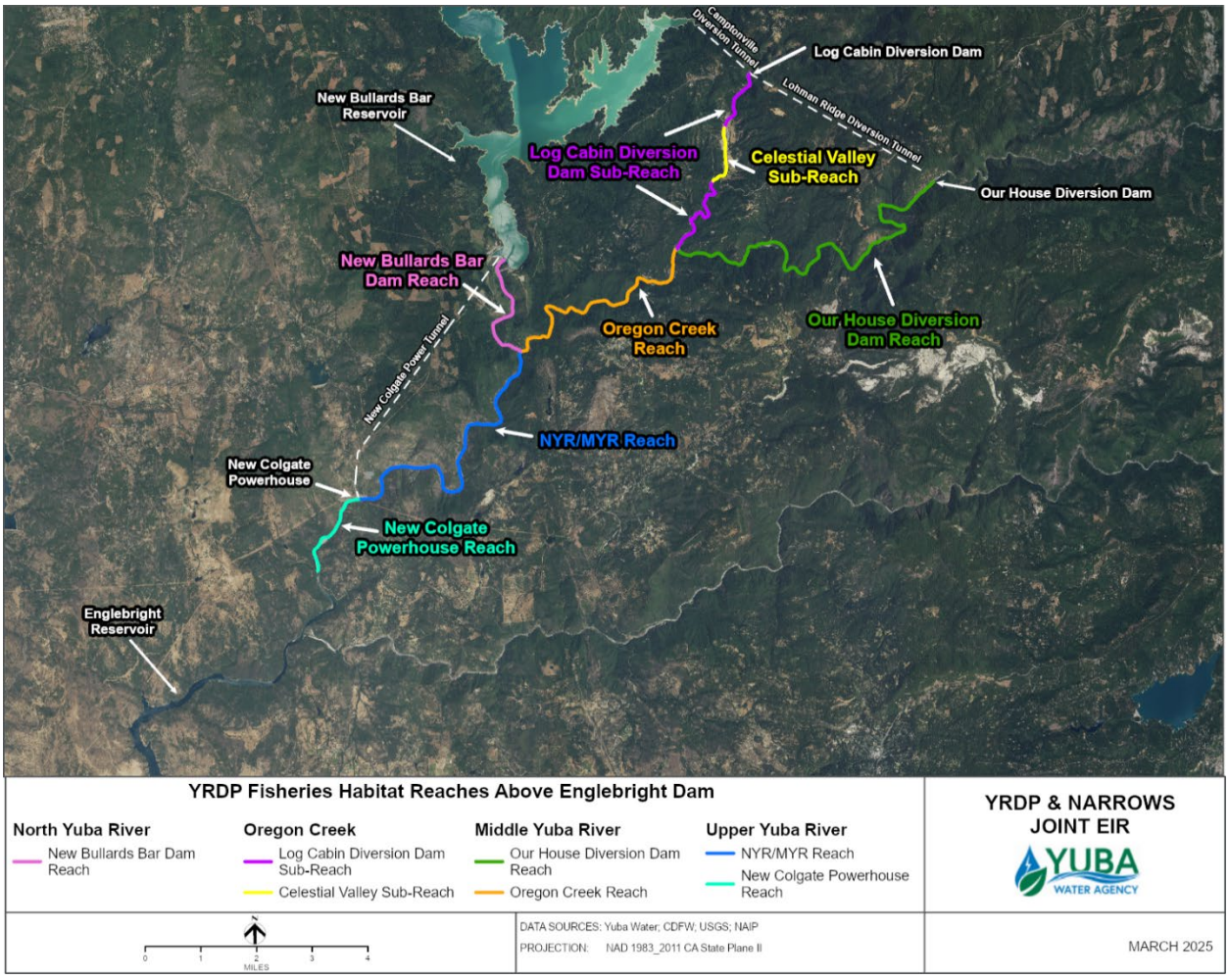

Figure 9.4-1. YRDP fisheries habitat reaches above Englebright Dam.

YB/DS Reaches Upstream of the YRDP

Trends in flow-dependent habitat availability changes associated with the provision of 15.6 TAF from upstream projects (YB/DS) were evaluated at a programmatic level for Alternative 1 for

rainbow trout, Sacramento sucker, and hardhead/pikeminnow in applicable reaches based on habitat-flow relationships and analyses presented in NID and PG&E (2010). Because the actual relative contribution of flow from the Middle Yuba River and South Yuba River watersheds and associated reservoir operations could vary, this impact analysis utilizes generalized trends in the hydrologic regimes in the Middle Yuba River and the general changes in flows modeled by NID (2023) in the South Yuba River and Canyon Creek as examples to characterize potential changes that could occur in fisheries habitat conditions under Alternative 1. Changes in flow-dependent habitat availability were evaluated based on directional changes in habitat associated with directional changes in flows (i.e., increases or decreases in habitat based on increases or decreases in flow) relative to the Existing Condition or Future Baseline under the following scenarios and assumptions.

- Existing Condition – The Base Case scenario in the FERC (2014) YB/DS FEIS (i.e., existing FERC license conditions for the YB/DS projects).
- Future Baseline – The new FERC licenses for the YB/DS projects including 4(e) flows and other flow-related license conditions (e.g., ramping rates, seasonal supplemental flows, etc.), as represented by the FERC staff alternative in the FERC (2014) FEIS.
- Alternative 1 – The same assumptions as Future Baseline above, with the addition of 15.6 TAF released by the YB/DS projects during April and May of Dry and Critical WYs.
    - For the Middle Yuba River, assumed that the 15.6 TAF would be evenly distributed across a 30 to 45-day period, such that Alternative 1 could result in a maximum increase in flow of approximately 175-260 cfs during the 30 to 45-day period (assuming all 15.6 TAF is provided in the Middle Yuba River).
    - For the South Yuba River and Canyon Creek, utilized the NID (2023) model scenarios as examples to characterize potential flow-related changes that could occur with implementation of the 15.6 TAF in these streams.

Because the intent of Alternative 1 is only to provide 15.6 TAF of water during April-May of Dry and Critical WYs, the evaluation of potential impacts to fisheries resources in YB/DS areas upstream of the YRDP under Alternative 1 focuses on changes that could occur during April and May of Dry and Critical WYs.

Lower Yuba River

Flow-dependent habitat availability analyses are conducted for the following species and lifestage-specific time periods. Time periods of evaluation are based on Yuba Water (2017) and more recent life history information described in Appendix 9A.

- Spring-run Chinook Salmon
    - Spawning (September through mid-October)
    - Fry Rearing (mid-November through mid-February)
    - Juvenile Rearing (year-round)

- Fall-run Chinook Salmon
    - Spawning (October through December)
    - Fry Rearing (mid-December through April)
    - Juvenile Rearing (mid-January through June)
- Steelhead
    - Spawning (January through April)
    - Fry Rearing (April through July)
    - Juvenile Rearing (year-round)
- Green Sturgeon
    - Adult Holding (April through mid-February)
    - Spawning (June and July)
- Lamprey
    - Spawning (March through July)
    - Ammocoete Rearing (year-round)

Habitat duration analyses were conducted for this DEIR by applying modeled daily flows to the habitat-flow relationships by hydrologic zone. Hydrologic zone (HZ) boundaries were based on points of primary inflows (accretion) and outflows (diversions) in the study area (Yuba Water 2013n; Figure 9.4-2).

For anadromous salmonid spawning and rearing lifestages, habitat availability is expressed as preferred habitat based on bioverification studies (see Appendix 9B) and is presented as area (acres or square feet). Habitat also is expressed as area (acres) for green sturgeon adult holding. Habitat is expressed as weighted usable area (WUA) for several lifestages (green sturgeon spawning, lamprey spawning and ammocoete rearing) based on the methodology applied by Yuba Water (2013f). For salmonid spawning lifestages, habitat availability also is expressed as percent of maximum habitat. The expression of percent of maximum habitat allows for evaluation of differences in the frequency of achieving 80% of maximum spawning habitat, which was identified by NMFS and USFWS (2013) as an indicator of population-level productivity[6].

[6] Expressing WUA as percent of maximum was conducted to provide biologic context for the results. In the NMFS and USFWS Klamath Project Operations Biological Opinion (2013), NMFS reports that available instream habitat of 80 percent of maximum (WUA) has been used as a guideline to develop minimum flow needs for the conservation of anadromous salmonids, and that: (1) NMFS assumes that at least 80 percent of maximum available habitat provides a wide range of conditions and habitat abundance in which populations can grow and recover; (2) where habitat availability is 80 percent of maximum or greater, habitat is not expected to limit individual fitness or population productivity or distribution, nor adversely affect the function of essential features of (coho) salmon critical habitat.

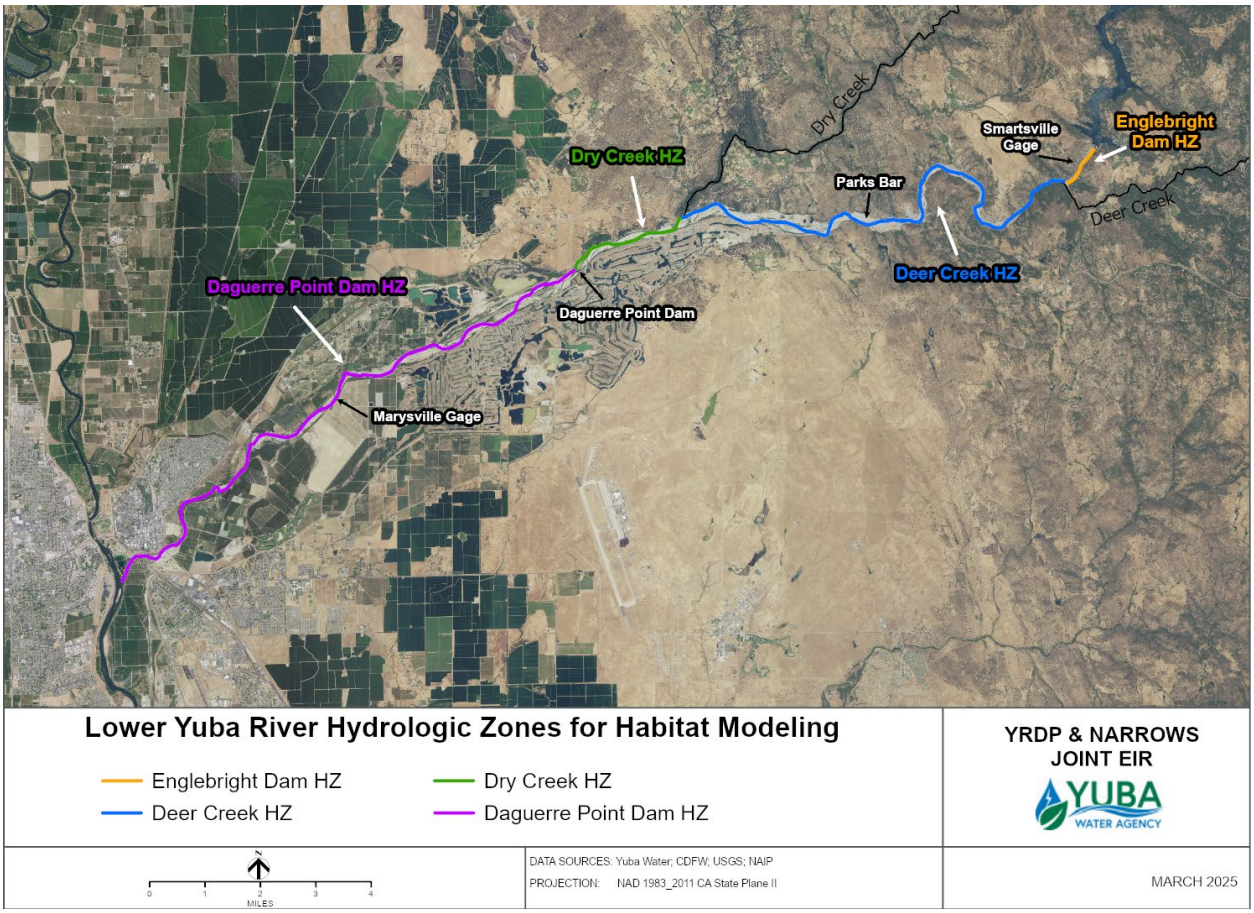

Figure 9.4-2. Hydrologic zone boundaries for habitat modeling in the lower Yuba River.

Based on species and lifestage-specific spatial distributions and habitat requirements (described in Appendix 9A), habitat availability for spring-run Chinook salmon and steelhead spawning is only evaluated upstream of DPD, whereas habitat availability for green sturgeon adult holding and spawning is only evaluated downstream of DPD. All other lifestages are evaluated throughout the lower Yuba River. Because anadromous fish spawning is not expected to occur or be successful outside of the bankfull channel (generally represented by habitat encompassed at 5,000 cfs) (Yuba Water 2017), the area of spawning habitat (and green sturgeon adult holding habitat) provided at flows greater than 5,000 cfs is restricted to the areal extent of the bankfull channel.

9.4.2.2.2 Water Temperature Suitabilities

For the fisheries impact assessment, water temperature index (WTI) values are used to evaluate whether the alternative scenarios would affect species and lifestage-specific thermal habitat suitability relative to the basis of comparison.

Areas Upstream of Englebright Dam

The USFWS and other resource agencies (CDFW, USFS) applied a 68°F (20°C) objective for the protection of coldwater fish species (particularly rainbow trout) in the Yuba River above Englebright Reservoir (USDOI 2017). Therefore, a water temperature of 68°F was identified as an upper indicator of thermal preference for rainbow trout adult and juvenile lifestages (Yuba Water

2017; FERC and USACE 2019). As described below, this is consistent with the identification of 68°F by Bratovich et al. (2012) as an upper tolerable (UT) water temperature index (WTI) value for adult steelhead (O. mykiss) immigration and juvenile steelhead rearing in the Yuba River Watershed. Consequently, 68°F is included as a WTI value for adult and juvenile rainbow trout in this DEIR.

FERC and USACE (2019) and Yuba Water (2017) also used 68°F as the indicator of water temperature suitability in the upper Yuba River Watershed for several other fish species and lifestages, including hardhead, Sacramento pikeminnow, and Sacramento sucker. Water temperature preference and tolerance information for these species is summarized below.

Cech et al. (1990) found that hardhead, Sacramento pikeminnow and Sacramento sucker exhibit similar metabolic rates and show similar responses to increased water temperature and decreased dissolved oxygen at water temperatures between 10 and 25°C (50 and 77°F). Myrick and Cech (2000) found that adult hardhead, Sacramento pikeminnow and Sacramento sucker exhibited similar swimming performance across water temperature treatments of 10, 15 and 20°C (50, 59 and 68°F). Thompson et al. (2012) found that adult and juvenile hardhead preferred water temperatures of about 69°F and 67°F, respectively. However, Thompson et al. (2012) also found that hardhead perform well (behaviorally and physiologically) at water temperatures between about 60.8 and 77.0°F, and that they reportedly avoid water temperatures between about 54 and 57°F. Juvenile hardhead appeared to have poor swimming performance at 11-16°C (51.8-60.8°F) (Thompson et al. 2012). In the South Fork American River, Cocherell et al. (2014) readily captured hardhead at water temperatures much cooler (about 46°F) than their reported preferred range. Sacramento sucker reportedly prefer water temperatures between about 68 and 77°F, although they are found in streams with water temperatures that rarely exceed 59-61°F (Moyle 2002). Sacramento pikeminnow exhibit preference for a wide range of water temperatures (56-82°F) depending on acclimation temperature (Knight 1985 as cited in Moyle 2002), but generally live in streams with summer water temperatures of 18-28°C (64.4-82.4°F) (Moyle 2002).

Based on the species-specific water temperature preferences and tolerances above, an index of thermal suitability for hardhead, Sacramento sucker, and Sacramento pikeminnow adults and juveniles for this DEIR includes the range of preferred water temperatures between about 61°F and 77°F. Evaluations of preferred suitability include identification of changes in the frequency of occurrence of water temperatures within this range.

Because suitable water temperatures for rainbow trout spawning and embryo incubation are lower than 68°F, the UT WTI value identified by Bratovich et al. (2012) for steelhead spawning (57°F) is used to evaluate thermal suitability for rainbow trout spawning and incubation during April through June. Because the suitable water temperature range for hardhead spawning is reportedly about 59-64.4°F (Wang 1986), 64°F is included as a WTI value for hardhead spawning during April through June. In addition, differences in the frequency of occurrence of water temperatures between about 59 and 64°F are considered in evaluating hardhead spawning thermal suitability.

Water temperature exceedance distributions are presented for each modeled scenario comparison with the WTI values by season for the year-round lifestages (excluding December through February when water temperatures are similar among scenarios and generally remain below WTI

values at evaluated locations) and separately for April through June with the spawning WTI values for rainbow trout and hardhead.

Due to the various potential permutations in potential reservoir operations under Alternative 1, water temperatures are addressed qualitatively below based on existing information and modeling conducted for the YB/DS projects.

Lower Yuba River

Water Temperature Index Value Analyses

Water temperature evaluation guidelines have been developed more extensively for Chinook salmon and steelhead than for other species. Chinook salmon and steelhead lifestage-specific WTI values developed by Bratovich et al. (2012) based on an extensive review of the fisheries literature with an emphasis on Central Valley streams were used to assess the effects of the alternatives relative to the basis of comparison. Both upper optimal WTI values and upper tolerable WTI values were defined and applied by for each lifestage of spring-run and fall-run Chinook salmon and steelhead in the lower Yuba River according to the following definitions (Table 9.4-1).

- **Upper Optimal Temperature (UO).** The upper optimum temperature represents the upper boundary of the optimum range and a water temperature value below which growth, reproduction, and/or behavior are not adversely affected by temperature.
- **Upper Tolerable Temperature (UT).** The upper tolerable temperature represents the upper boundary of a water temperature range within which fish can survive indefinitely, without experiencing substantial detrimental effects to physiological and biological functions such that survival occurs, but growth and reproduction success are at levels below optimal.

Chinook salmon adult holding WTI values are applied only to spring-run Chinook salmon because fall-run Chinook salmon generally enter freshwater in a sexually mature state and spawn soon after reaching freshwater spawning grounds. The Chinook salmon smoltification WTI values also are applied only to spring-run Chinook salmon, because fall-run Chinook salmon generally emigrate from Central Valley rivers as young-of-the-year shortly after emergence from the gravel (RMT 2013).

Table 9.4-1. Lifestage-specific Upper Optimal and Upper Tolerable WTI Values for Chinook Salmon and Steelhead.

Chinook Salmon			Steelhead		
Lifestage	**Upper Optimal WTI**	**Upper Tolerable WTI**	**Lifestage**	**Upper Optimal WTI**	**Upper Tolerable WTI**
Adult immigration	64°F	68°F	Adult immigration	64°F	68°F
Adult holding	61°F	65°F	Adult holding	61°F	65°F
Spawning	56°F	58°F	Spawning	54°F	57°F
Embryo incubation	56°F	58°F	Embryo incubation	54°F	57°F

Chinook Salmon			Steelhead		
Lifestage	**Upper Optimal WTI**	**Upper Tolerable WTI**	**Lifestage**	**Upper Optimal WTI**	**Upper Tolerable WTI**
Juv. rearing & downstream movement	61°F	65°F	Juv. rearing & downstream movement	65°F	68°F
Smoltification[7]	63°F	68°F	Smoltification	52°F	55°F

For other fish species of management concern in the lower Yuba River (green sturgeon, white sturgeon, lamprey), WTI values evaluated in this DEIR are presented in Table 9.4-2. The WTI values applied to green sturgeon lifestages are described in Yuba Water (2017). The adult immigration and holding WTI value for white sturgeon (77°F) is based on the upper limit of suitable water temperatures for adult white sturgeon identified in Israel et al. (2011). The WTI values applied to lamprey are based on studies and literature described in Close et al. (2001), Meeuwig et al. (2002), Meeuwig et al. (2005), and Clemens et al. 2016. Although limited water temperature preference data are available for adult lamprey, these sources suggest that 50–64°F is optimal for early lifestage development and water temperatures below 72°F are preferred by ammocoetes.

All of the WTI values evaluated in this document represent boundaries above which water temperatures could be considered to affect evaluated fish species. However, the WTI values are not meant to be significance thresholds but instead provide a mechanism by which to compare the resulting water temperatures associated with the alternative scenarios relative to the basis of comparison. Because water temperature suitability is a function of both the frequency and magnitude of exceedance relative to lifestage-specific WTI values, water temperature suitabilities are evaluated using seasonal water temperature exceedance probability distributions under alternative scenarios relative to the basis of comparison[8]. Lifestage-specific water temperature exceedance probability distributions are presented for individual lifestages (or portions of lifestages) occurring during the spring, summer and fall seasons. The winter season (December through February) and the month of March were not included in the water temperature exceedance probability figures and analyses because water temperature distributions are similar among scenarios and typically remain below lifestage-specific WTI values at evaluated locations.

Table 9.4-2. Lifestage-specific WTI Values and Ranges for Other Fish Species of Management Concern.

Species	Lifestage	Water Temperature Index Values and Ranges (°F)
Green sturgeon	Adult immigration and holding	61
	Spawning and embryo incubation	68
	Juvenile rearing and downstream movement	66
White sturgeon	Adult immigration and holding	77
Lamprey	Adult immigration	42–60

[7] Although Bratovich et al. (2012) identified a smolt emigration lifestage, the literature supporting the WTI value development for this lifestage was primarily related to the process of smoltification.

[8] Water temperature exceedance distributions during the warmest months of the year (i.e., June through September) (see Appendix 4C) were examined to evaluate the probability of exceeding the 77°F WTI value for this lifestage.

Species	Lifestage	Water Temperature Index Values and Ranges (°F)
	Spawning and embryo incubation	50–64
	Ammocoete rearing and downstream movement	72

Other fish species of management concern (hardhead, Central California roach, striped bass, American shad) reportedly prefer a relatively broad range of water temperatures (see Sections 9.2.5.1 and 9.2.5.2). Because the thermal tolerances of hardhead, Central California roach, striped bass, and American shad are typically broader than those identified for anadromous salmonids, the thermal suitabilities for these species were qualitatively assessed based on the evaluation of changes in water temperatures and suitabilities for species of primary management concern (i.e., spring-run and fall-run Chinook salmon, steelhead, green and white sturgeon, and lamprey).

Longitudinal Extent of Thermally Suitable Spring-run Chinook Salmon Spawning and Embryo Incubation Habitat

As described in Chapter 3 (Alternatives Description), Yuba Water (2022b) developed and evaluated a scenario that included both flow and non-flow actions to address FERC's Additional Information Request (AIR) to reduce water temperatures in the lower Yuba River from July through November of Dry and Critical water years (WYs). Based on an evaluation of existing thermal suitability for listed fish species during July through November, the September and October spring-run Chinook salmon spawning and initial embryo incubation period was targeted for improving water temperature conditions in the lower Yuba River during Dry and Critical WYs (Yuba Water 2022b). Consistent with Yuba Water (2022b), this DEIR includes an assessment of changes in the longitudinal extent of thermally suitable spring-run Chinook salmon spawning and embryo incubation habitat during September and October under the modeled alternative comparisons, with a focus on Dry and Critical WYs.

Estimation of the length of thermally suitable spawning habitat is restricted to downstream of the Narrows 1 Powerhouse (RM 23.9) due to a lack of suitable spawning gravel upstream of that location. For each scenario, the length of habitat (to the nearest 0.1 mile) extending downstream from Narrows 1 Powerhouse where water temperatures are at or below the Chinook salmon spawning UO and UT WTI values was estimated for each day during September and October of each model year. For each scenario, results are presented for complete spawning years (i.e., years where both September and October were modeled). Results are presented for each comparison as exceedance distributions of all daily lengths of thermally suitable habitat over the evaluation period and as average daily time-series of thermally suitable lengths of habitat over the September through October period. These analyses are conducted for the entire simulation period (spawning years 1970-2020) and separately for Dry and Critical WYs (as defined by the Smartsville Index).

9.4.2.3 Additional Operations-Related Impacts

In addition to simulated changes in species and lifestage-specific flow-dependent habitat availability and thermal suitability, the following sections describe the methodologies for evaluation of additional operations-related effects of the Proposed Projects and alternatives in the upper Yuba River Watershed and lower Yuba River.

9.4.2.3.1 YRDP Reaches and Reservoirs Upstream of Englebright Dam

Reservoir Fish Habitat Conditions

Warmwater Fish in New Bullards Bar Reservoir

As described in Yuba Water (2017), warmwater game fish species in NBBR include spotted bass, green sunfish, bluegill, crappies, and catfishes. In general, these fish use the warm upper layer of the reservoir and nearshore littoral habitats throughout most of the year. Seasonal changes in reservoir storage, as it affects reservoir water surface elevation, and the rates at which water surface elevation change during specific periods of the year, can directly affect the reservoir's warmwater fish. Decreases in reservoir water surface elevation during the warmwater fish spawning period can dewater nests, which can result in egg mortality and ultimately reduce initial year-class strength. Black bass spawning may begin as early as February, or as late as May, in southern and northern California reservoirs, respectively, and may possibly extend to July in some waters. However, the majority of black bass and other centrarchid spawning in California occurs from March through May (Lee 1999; Moyle 2002). Consequently, to evaluate the potential for operations-related effects to warmwater fish species in NBBR, the magnitude of change (feet mean sea level) in reservoir water surface elevation occurring under the Proposed Projects and Alternatives during each month of the primary spawning period for nest-building fish (March through June) was determined and compared to that modeled for the relevant baseline condition. Specifically, based on average monthly simulated WSEs during February through June, the frequency of monthly reductions in WSE of 6 feet or greater were calculated for March through June for each year over the 52-year simulation period for each comparison.

Review of available literature suggests that, on average, self-sustaining black bass populations in North America experience a nest success (i.e., the nest produces swim-up fry) rate of 60 percent (Friesen 1998; Goff 1986; Hunt and Annett 2002; Knotek and Orth 1998; Kramer and Smith 1962; Lukas and Orth 1995; Neves 1975; Philipp et al. 1997; Raffetto et al. 1990; Ridgway and Shuter 1994; Turner and MacCrimmon 1970). CDFG examined the relationship between California reservoir water surface elevation fluctuation rates and nesting success for black bass, and suggested that a reduction rate of approximately six feet per month would result in the potential for a 60 percent nest success rate for black bass (Lee 1999). Therefore, a decrease in reservoir water surface elevation of six feet or more per month is selected as the threshold beyond which spawning success of nest-building, warmwater fish could potentially result in long-term population declines.

Coldwater Fish in New Bullards Bar Reservoir

When NBBR is thermally stratified (generally April through November), coldwater fish within the reservoir reside primarily within the reservoir's metalimnion and hypolimnion where water temperatures remain suitable. Reduced reservoir storage during this period could reduce the reservoir's coldwater pool volume, thereby reducing the quantity of habitat available to coldwater fish species during these months. Reservoir coldwater pool size generally decreases as reservoir storage decreases, although not always in direct proportion because of the influence of reservoir basin morphometry. Therefore, to assess potential storage-related impacts on coldwater fish habitat availability in NBBR, end-of-month storage modeled for each year of the simulation period under

the Proposed Projects and Alternatives are compared to end-of-month storage under the relevant baseline conditions for each month of the April through November period.

Fish Access to New Bullards Bar Reservoir Tributaries

As described in Yuba Water (2017), fish passage studies of tributaries to NBBR indicated that all but one potential barrier to fish passage on tributaries accessible to reservoir fish would be inundated during spring and early summer (the period when fish would be expected to move into tributaries) under existing operations. Based on those results, potential effects to NBBR tributary fish access were evaluated through assessments of the extent to which a given scenario would result in substantial reductions in NBBR water surface elevations during the March through June timeframe.

Entrainment

New Colgate Power Tunnel

Water is supplied to the New Colgate Power Tunnel through two intakes at NBBD. The lower intake is at an elevation of 1,627.5 ft and the upper intake is at an elevation of 1,808 ft. Under existing YRDP operations, only the lower intake is used per direction from CDFW. As part of its YRDP relicensing, Yuba Water deployed gill nets in NBBR near NBBD (Yuba Water 2017). The analysis of potential effects to fish from entrainment into the New Colgate Power Tunnel in this DEIR is based on the results of Yuba Water's relicensing gill net sampling in NBBR, as well as evaluations of the extent to which YRDP operations would affect NBBR water surface elevations as well as the manner in which water is supplied to the New Colgate Power Tunnel.

Narrows 2 Power Tunnel Intake and Narrows Tunnel via USACE's Englebright Intake

As described in Yuba Water (2017) and Yuba Water (2023b), water is supplied to YRDP's Narrows 2 Power Tunnel via the Narrows 2 Power Tunnel Intake, and to the Narrows Project's Narrows Tunnel via USACE's Englebright Intake. The invert elevations of Yuba Water's YRDP Narrows 2 Power Tunnel Intake and the USACE's Englebright Intake (which supplies water to the Narrows Tunnel) are 439 and 460 ft, respectively. As part of its YRDP relicensing, Yuba Water deployed gill nets in Englebright Reservoir, with some nets near the intakes and at similar depths (Yuba Water 2017). The analysis of potential effects to fish from entrainment into the Narrows 2 Power Tunnel and Narrows Tunnel in this DEIR is based on the results of Yuba Water's relicensing gill net sampling in Englebright Reservoir, as well as evaluations of the extent to which YRDP operations would affect Englebright Reservoir water surface elevations.

Warmwater and Coldwater Fish in Englebright Reservoir

As described in Yuba Water (2017), warmwater game fish species in Englebright Reservoir include spotted bass, green sunfish, bluegill, redear sunfish, and smallmouth bass. Additionally, Yuba Water (2017) documented native fish species including hardhead and Sacramento sucker in Englebright Reservoir. Coldwater fish species in Englebright Reservoir include rainbow trout and brown trout (Yuba Water 2017). Water surface elevations in Englebright Reservoir remain relatively stable under existing operations because there is a specified water surface elevation operational range to protect beneficial uses associated with Skippers Cove Marina (Yuba Water

2017). Under the Proposed Projects and alternatives, YRDP and Narrows Project operations would not result in substantial changes to conditions for warmwater, native, or coldwater fish or aquatic habitat in Englebright Reservoir due to water surface elevation (and consequently storage) restrictions. Additionally, Yuba Water's Narrows Project Proposed Condition 3 (Fish Stocking) would continue stocking of rainbow trout at the same levels that occur under existing conditions. Consequently, the Proposed Projects and alternatives would be expected to result in similarly suitable conditions for warmwater, native, and coldwater fish and aquatic habitat in Englebright Reservoir relative to the bases of comparison, and these resources are not carried forward for further detailed analysis in this chapter.

Effects Related to Spills at New Bullards Bar Dam

Rapid changes in flow resulting from spills at NBBD have the potential to adversely affect fisheries resources in the North Yuba River downstream of NBBD through the mechanisms of fish stranding, temporary loss of habitat or restricted access to habitat, and reduced spawning success. However, Yuba Water did not document any fish stranding during its YRDP relicensing studies, and there is no available information as to the extent that fish stranding and other potential adverse effects to fisheries resources in the North Yuba River downstream of NBBD occur as a result of spills at NBBD. Under the Proposed Projects and alternatives, YRDP Condition AR4 (Control Project Spills at NBBD) would require Yuba Water to implement spill cessation operations at NBBD from May 1 through July 31, with spill reductions dependent on spill rates as described in Chapter 2. Although this condition would result in more gradual flow reductions between May and July subsequent to some spill events at NBBD during some Wet and Above Normal WYs, these spill events occur with relatively low frequency. Implementation of YRDP Condition AR4 under the Proposed Projects and alternatives would be expected to result in similar or reduced levels of spill-related impacts to fisheries resources in the North Yuba River downstream of NBBD relative to the bases of comparison. Consequently, this impact is not carried forward for further detailed analysis in this chapter.

Effects Related to Diversion Dams

YRDP operations at the OHDD and associated Lohman Ridge Tunnel on the Middle Yuba River, and the LCDD and associated Camptonville Tunnel on Oregon Creek, have the potential to affect fish and aquatic habitat through the mechanisms of restricted fish passage, entrainment, fish stranding, and effects to physical habitat conditions related to sediment and woody material management. The potential for effects to occur to fish due to these mechanisms under each alternative are assessed based on the results of potential impacts identified during YRDP relicensing studies, the extent to which conditions under each alternative would change YRDP operations at the diversion dams, and the inclusion of additional protective measures in the Proposed Projects and alternatives.

Fish Stranding Downstream of New Colgate Powerhouse

YRDP operations at New Colgate Powerhouse can result in flow fluctuations in the upper Yuba River downstream of New Colgate Powerhouse. These flow fluctuations have the potential to result in adverse effects to fisheries resources in the affected area through the mechanism of fish stranding. Stranding and potential for stranding were assessed by Yuba Water during visual

observation surveys conducted in 2012, which included surveys conducted prior to, during, and after ramping events (Yuba Water 2017). The study showed that few fish, only one of which was a rainbow trout and all of which were small sized, were stranded and all fish subsequently were able to return to the main channel (Yuba Water 2017). Based on these results, and because the Proposed Projects and alternatives would not substantially change the manner in which Yuba Water operates the New Colgate Powerhouse (i.e., as a hydro-peaking facility), these scenarios would not be expected to result in an increased potential for adverse effects to fisheries resources in the upper Yuba River downstream of the New Colgate Powerhouse relative to the bases of comparison. Consequently, this impact is not carried forward for further detailed analysis in this chapter.

Effects Related to License Implementation Plans

YRDP

As described in Chapter 2, Yuba Water would be required to develop and/or implement a number of license conditions and implementation plans once a new FERC license is issued for the YRDP. Several of the conditions (AR1, AR2, AR3, AR4, AR9, AR10, AR11, AR12, WR2, WR3, WR5, and WR6) would affect the manner in which Yuba Water operates the YRDP, and the effects of those conditions on operations have been incorporated into the YRDPM. Potential impacts to fisheries and aquatic resources that could result from these conditions are analyzed through assessments of simulated flows and water temperatures for each of the modeled alternative scenarios.

Other conditions associated with license implementation plans that may not result in changes in operations (and thereby cannot be easily analyzed through assessments of simulated flows and water temperatures), but which have the potential to result in effects to fisheries and aquatic resources in areas upstream of Englebright Dam through activities associated with plan implementation (based on descriptions provided in Chapter 2 and Yuba Water (2017)), include:

- AR5 – Implement Aquatic Invasive Species Management Plan
- AR6 – Implement New Bullards Bar Reservoir Fish Stocking Plan
- AR7 – Implement Upper Yuba River Aquatic Monitoring Plan
- GS1 – Implement the Erosion and Sediment Control Plan
- GS2 – Implement Log Cabin and Our House Diversion Dams Sediment Management Plan
- GS3 – Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan
- RR3 – Provide Whitewater Boating Below Our House Dam
- WR4 – Implement Streamflow and Reservoir Level Compliance Monitoring
- WR7 – Implement Water Temperature Monitoring Plan

- WR8 – Implement Water Quality Monitoring Plan
- WR9 – Implement Drought Management Plan

The potential effects of Yuba Water's implementation of these YRDP license implementation plans under the Proposed Projects are evaluated through assessments of the extent to which activities associated with plan implementation could result in direct or indirect impacts to fisheries or aquatic habitat, changed conditions relative to the bases of comparison, as well as any identified BMPs or impact avoidance and minimization measures.

Narrows Project

As described in Chapter 2, Yuba Water has proposed to include in a new Narrows Project FERC license certain existing license conditions with modifications, as well as several new conditions. Of the seven modified or new conditions proposed by Yuba Water for inclusion in a new FERC license for the Narrows Project, only two have the potential to affect fisheries and aquatic resources in areas upstream of Englebright Dam:

- Yuba Water's Narrows Project Proposed Condition 3, Fish Stocking (in Englebright Reservoir)
- Yuba Water's Narrows Project Proposed Condition 5, Water Surface Elevation in Englebright Reservoir

Proposed Condition 5 addressing water surface elevations in Englebright Reservoir is a continuation of the minimum elevation requirements in the existing Narrows Project license, and therefore would not result in changed conditions for fish or fish habitat in Englebright Reservoir. Consequently, potential impacts of Proposed Condition 5 on fisheries resources upstream of Englebright Dam are not carried forward for further detailed analysis in this chapter.

As described in Chapter 2 and Yuba Water (2023a), Yuba Water's Narrows Project Proposed Condition 3 would require Yuba Water to stock Englebright Reservoir with 5,000 rainbow trout on an annual basis, with the timing and location of fish stocking to be coordinated with CDFW. Yuba Water's Narrows Project Proposed Condition 3 is a continuation of Article 403 of the existing FERC license for the Narrows Project, which requires the Licensee, in consultation with CDFW, to stock 5,000 rainbow trout in Englebright Reservoir. Consequently, implementation of Yuba Water's Narrows Project Proposed Condition 3 is not anticipated to result in changed conditions relative to the Existing Condition, and therefore is not carried forward for further detailed analysis in this chapter.

9.4.2.3.2 YB/DS Reaches Upstream of the YRDP

Under Alternative 1 programmatic analyses, additional potential operations-related YB/DS effects to areas upstream of the YRDP include potential rainbow trout redd scour, redd dewatering and juvenile stranding/isolation for hardhead, Sacramento pikeminnow, and Sacramento sucker in YB/DS reaches including the Middle Yuba River below Jackson Meadows Dam, Canyon Creek below Bowman Lake and the BSCDD, Fordyce Creek below Fordyce Lake Dam, and the South Yuba River below Spaulding Dam to Englebright Reservoir. These potential impacts are addressed

at a programmatic level through review of potential changes in hydrology based on the provision of the 15.6 TAF, including hydrology modeled by NID (2023) as examples to characterize potential changes that could occur during Dry and Critical WYs during applicable lifestage-specific time periods.

9.4.2.3.3 Lower Yuba River

In addition to potential changes in flow-dependent habitat availability and water temperature, other operations-related effects on fisheries resources evaluated in the lower Yuba River include the potential for salmonid redd dewatering, redd scour, and fry and juvenile stranding and isolation.

Chinook Salmon and Steelhead Redd Dewatering

Yuba Water (2017) developed the following flow reduction limitations measure (YRDP Proposed Condition AR9: Control Project Ramping and Flow Fluctuation Downstream of Englebright Dam, summarized in Chapter 2 – Project Description) to minimize the potential for spring-run Chinook salmon and steelhead redd dewatering in the lower Yuba River during controlled operational conditions.

- To minimize the potential for spring-run Chinook salmon redd dewatering, during the period from September 2 through December 31 (corresponding to the spring-run Chinook salmon spawning and incubation period), Licensee shall not reduce the flow downstream of Englebright Dam to less than the larger of: 1) the applicable minimum streamflow requirement specified in Yuba Water's YRDP Proposed Condition AR3; or 2) the flow that would result from applying the maximum flow reduction amount specified in Table 1 of this condition corresponding to the base flow range determined using the maximum 5-day average flow that occurred on days when this condition was in effect during that September 2 through December 31 period. During the period of September 2 through 5, the base flow range shall be determined by the average daily flow on September 1.
- To minimize the potential for steelhead redd dewatering, during the period from January 1 through May 31 (corresponding to the steelhead spawning and incubation period), Licensee shall not reduce the flow downstream of Englebright Dam to less than the larger of: 1) the applicable minimum streamflow requirement specified in Yuba Water's YRDP Proposed Condition AR3; or 2) the flow that would result from applying the maximum flow reduction amount specified in Table 2 of this condition corresponding to the base flow range determined using the maximum 5-day average flow that occurred on days when this condition was in effect during that January 1 through May 31 period. During the period of January 1 through 5, the base flow range shall be determined by the average daily flow on December 31. If this condition was not in effect on December 31, then the base flow range shall be the minimum flow authorized under the preceding paragraph on the latest date on which this condition was in effect. During the period from April 1 through May 31 when Flow Schedules 3 through 6 or Conference Years are in effect specified in Yuba Water's YRDP Proposed Condition WR3, Licensee may reduce the flow downstream of Englebright Dam to the applicable minimum streamflow requirement specified in Yuba Water's YRDP Proposed Condition AR3.

The maximum flow reductions possible for each flow range specified in Table 1 and Table 2 (see Tables 2.4-8 and 2.4-9 in Chapter 2) were developed by identifying the resultant decreased flow levels that would result in no more than about 1 percent of expected spring-run Chinook salmon and steelhead redds being dewatered using known spatial and depth distributions of spring-run Chinook salmon and steelhead redds and morphological unit-specific stage-discharge relationships. Because fall-run Chinook salmon spawning and embryo incubation extends from October 1 through March 31, YRDP Conditions 1 and 2, which would restrict flow reductions during the spring-run Chinook salmon and steelhead spawning and embryo incubation periods, also would restrict flow reductions during the fall-run Chinook salmon spawning and embryo incubation period in the Yuba River downstream of Englebright Dam. Therefore, no additional conditions were proposed for fall-run Chinook salmon. This condition would not apply to: (a) YRDP operations during emergencies; (b) to releases required by USACE's flood control criteria; (c) releases required to maintain a flood control buffer or for other flood control purposes; (d) bypasses of uncontrolled flows into Englebright Reservoir; (e) during times when Englebright Dam is spilling; or (f) when releases are governed by the limits of Table 3 of this condition (maximum flow reductions to enhance riparian seedling recruitment; see Table 2.4-10 in Chapter 2).

As described in Yuba Water (2017), this condition would minimize the potential for anadromous salmonid redd dewatering in the lower Yuba River during controlled YRDP operational conditions. Implementation of this condition would be beneficial because it would result in either similar or reduced potential for salmonid redd dewatering under the Proposed Projects and alternatives relative to the Existing Condition. Therefore, salmonid redd dewatering is not carried forward for further detailed analysis in this chapter.

Redd Scour

Because the Proposed Projects and Alternative scenarios could result in changes in flows in the lower Yuba River when flows are relatively high under the bases of comparison, the potential for scour and erosion in the lower Yuba River is considered in this evaluation. Gervasi et al. (2021) evaluated relationships between topographic change (scour and deposition) in the lower Yuba River and multiple hydrologic metrics. Topographic change was evaluated for three epochs (1999-2008, 2008-2014, 2014-2017) using digital elevation model (DEM) differencing. Hydrologic metrics evaluated for each epoch included instantaneous peak flow, volume of water released above six different discharge zones (bankfull – 5,000 cfs[9], 2x bankfull – 10,000 cfs, floodway – 21,100 cfs, 6x bankfull – 30,000 cfs, and flood-prone – 42,200 cfs), and duration of flow occurring above each of the six discharge zones. Gervasi et al. (2021) found that peak discharge was not correlated with total scour nor net export of sediment across the epochs. Instead, total scour correlated best with the hydrologic duration and volume metrics, particularly above the floodway stage. Therefore, potential effects on channel morphology and scour in the lower Yuba River were evaluated by comparing the duration (daily frequency) of modeled flows exceeding the bankfull and floodway stages under the Proposed Projects and Alternative scenarios at two representative locations – below Deer Creek and at Marysville. Although this analysis does not correlate specific

[9] Although the bankfull flow varies along the lower Yuba River, 5,000 cfs has been identified as a generalized indicator of bankfull flow in the lower Yuba River (Wyrick and Pasternack 2012).

flow rates to specific rates or amounts of scour, it is used as an indicator of potential impact to anadromous salmonid redds associated with scour.

Fry and Juvenile Stranding and Isolation

Juvenile salmonids and other aquatic organisms can become stranded on gravel bars or isolated in off-channel habitats (e.g., side channels, backwaters) as a result of flow fluctuations in rivers. Bar stranding or 'beaching' is the type of stranding that occurs on low-gradient bars in which fish are exposed to the air or isolated in tiny pockets of standing water that may be present between larger particles or below the substrate on the bar surface. Off-channel stranding or 'isolation' is the type of stranding that occurs in backwaters, secondary channels, and other floodplain habitats that become disconnected from the main river by receding flows.

As described by Yuba Water (2017), no relationship was observed between ramping rates in the lower Yuba River and the incidence of fry stranding on low gradient bars within the observed range of ramping rates (flow reductions of 100 to 200 cfs per hour at Narrows 2 Powerhouse). These ramping rates corresponded to changes in stage of 0.4 to 1 inch per hour at the study sites, well within the rates of stage change considered to be protective. A rate of 1 inch per hour is generally within the range of natural rates of stage reductions in unregulated rivers (Olson and Metzgar 1987, as cited in Yuba Water (2003), while recommended stage reduction levels for gravel bars of regulated rivers are typically 2.5–5 cm (1-2 inch) per hour to be protective of anadromous salmonids (WDF 1992). Nevertheless, some stranding of post-emergent Chinook salmon fry has been observed even at half this rate, suggesting that young fry have limited ability to detect or respond to receding water levels, regardless of the ramping rate. Similarly, surveys conducted by Yuba Water indicate that the small size and strong association of young fry with substrates limit their ability to detect or respond to receding water levels, regardless of ramping rate. Based on the densities and sizes of juvenile salmon observed in the lower Yuba River study sites, most if not all of the fish visible to divers in shallow, nearshore areas were able to avoid stranding during day and nighttime flow reductions under normal operations (i.e., planned operational changes). These fish were generally greater than 40 mm in length and were observed maintaining position and actively feeding above the substrate (Yuba Water 2017).

Sommer et al. (2005) found that juvenile-sized Chinook salmon did not appear to be particularly prone to stranding mortality as floodwaters receded in the Yolo Bypass. RST catch data in Yolo Bypass also did not indicate that stranding had a major influence on patterns of juvenile emigration (Sommer et al. 2005). As reported by Sommer et al. (2005), previous studies, including Higgins and Bradford (1996), reported that juvenile salmonids are relatively mobile and that most juveniles avoided being stranded during moderate rates of stage change.

As with bar stranding, the potential for off-channel stranding (isolation) is highest for Chinook salmon fry following uncontrolled peak runoff or spills in winter and early spring (December-March). Field surveys conducted by Yuba Water of potential off-channel stranding sites in the lower Yuba River before and after lower Yuba River flow reductions indicate that off-channel stranding is a site-specific phenomenon that depends on the complex interaction of hydrology, site conditions (stage-discharge relationships and channel and bar morphology), and species life history, habitat use, and behavior (Yuba Water 2017). Consequently, the potential for off-channel stranding for a given flow reduction varies by site, reach, and season.

While floodplain and off-channel habitats are sources of stranding mortality, studies have documented that there also are significant growth and potential survival benefits associated with floodplain and off-channel habitats that are used by Chinook salmon in the Central Valley (Limm and Marchetti 2009; Jeffres et al. 2008; Sommer et al. 2001, 2005). Field observations in the lower Yuba River indicate that the occurrence of off-channel isolation is relatively insensitive to flow ramping rates and is largely a function of the magnitudes of winter and spring flows (which determine the accessibility of fry to off-channel areas), site conditions (particularly channel and floodplain morphology), and seasonal abundance, habitat use, and emigration timing of juvenile salmon and steelhead (Yuba Water 2017). The fate of juvenile salmonids in isolated off-channel sites can also vary depending on the suitability of habitat conditions in these sites through the summer and fall. Although isolated juveniles may die from predation, water temperature shock, and oxygen depletion, and juveniles that survive isolation in off-channel habitats may be in relatively poorer condition, monitoring of off-channel sites in the lower Yuba River confirmed that some of these sites can support juvenile salmonids for long periods of time and provide favorable rearing conditions based on observed growth and survival (Yuba Water 2017).

As described in Chapter 2, the new FERC licenses for the YRDP and Narrows Project under the Proposed Projects would include three conditions (two under the YRDP and one under the Narrows Project) that Yuba Water would implement specifically to minimize the potential for fry and juvenile stranding and/or isolation in the lower Yuba River due to YRDP operations. The two YRDP conditions include YRDP Condition AR9 (Control Project Ramping and Flow Fluctuations Downstream of Englebright Dam) and FERC's draft YRDP license Article 409 (Develop and Implement a New Narrows Reach Fish Stranding Prevention Plan), while the Narrows Project condition is Yuba Water's Narrows Project Proposed Condition 2 (Ramping Rates). YRDP Condition AR9 would require Yuba Water to limit flow reduction rates and flow fluctuations to levels that FERC and USACE (2019, p. 2-195) found would be more protective of anadromous salmonids than existing YRDP operations. FERC's draft YRDP license Article 409 would require Yuba Water to develop, through consultation with USACE, CDFW, NMFS, USFWS, and SWRCB, a plan for preventing fish stranding downstream of Englebright Dam due to YRDP operations and for reporting potential fish stranding events to USFWS, NMFS, and CDFW. Yuba Water's Narrows Project Proposed Condition 2 would require Yuba Water to operate the Narrows Project to the same flow fluctuation limits as would be required for the Narrows 2 under the new YRDP license. Because these conditions would be implemented under the Proposed Projects and alternatives, salmonid fry and juvenile stranding due to normal project operations (i.e., planned operational changes) would be expected to occur less frequently under these scenarios relative to the bases of comparison. Consequently, salmonid fry and juvenile stranding due to normal operations is not carried forward for further detailed analysis in this DEIR.

Other Operations-related Effects at Narrows 1 and Narrows 2 Powerhouses

Fish Stranding, Isolation, and Redd Dewatering Due to Unanticipated Forced Outages

In addition to the potential for stranding and isolation of salmonids associated with planned operational changes at the Narrows 2 facility, unanticipated forced outages of the Narrows 2 and Narrows 1 powerhouses can occur, primarily due to equipment failure. Unanticipated outages of the powerhouses can result in a temporary reduction in flow in the lower Yuba River, potentially affecting various salmonid lifestages. Forced outages and their potential effects on salmonids in

the lower Yuba River during recent years are described in Section 3.2.3.5 of Appendix 9A, and are briefly summarized below.

- February 8, 2015 Minimum Flow Deviation - An equipment failure at the Narrows 2 Powerhouse resulted in flow at the Smartsville Gage dropping below the FERC-approved minimum flow requirement of 550 cfs for 45 minutes, with a minimum flow of 150 cfs. During surveys conducted the day after the deviation, biologists observed about 100 to 200 post-emergent Chinook salmon fry mortalities, unspecified as either spring-run or fall-run Chinook salmon, in the area extending from just downstream of Narrows 1 Powerhouse to the confluence with Deer Creek. Living juvenile Chinook salmon also were observed but were not quantified. Due to the adverse effects to fishery resources, FERC required that Yuba Water and PG&E develop a mitigation plan to remedy the adverse effects to the Yuba River fishery resulting from the minimum flow violation. Under the mitigation plan, Yuba Water installed 30 pieces of LWM at three locations to promote juvenile salmonid rearing in the lower Yuba River during 2019.
- August 17, 2020 Minimum Flow Deviation – A transmission line disturbance (likely a lightning strike) caused the Narrows 2 Powerhouse to trip offline, which ultimately resulted in flow at the Smartsville Gage dropping below the maximum 15% reduction allowed (relative to the daily average flow) for a total of 5 minutes. Yuba Water evaluated potential impacts to spring-run Chinook salmon adult holding and spawning, fall-run Chinook salmon pre-spawn staging, and over-summer juvenile rearing for both spring-run Chinook salmon and steelhead, and concluded that the unanticipated forced outage would not have resulted in impacts to spring-run or fall-run Chinook salmon spawning, and that it was unlikely that the event resulted in significant adverse impacts to spring-run Chinook salmon adult holding, fall-run Chinook salmon adult pre-spawn staging, and over-summer juvenile rearing for both spring-run Chinook salmon and steelhead.
- October 5, 2020 Minimum Flow Deviation – An equipment malfunction of the Narrows 1 hydro-controller caused an unanticipated reduction in releases from the Narrows 1 Powerhouse from 920 cfs to 673 cfs for a total of about 7 minutes. Yuba Water evaluated potential impacts to spring-run and fall-run Chinook salmon spawning and embryo incubation, fall-run Chinook salmon adult pre-spawn staging, and over-summer juvenile rearing for both spring-run Chinook salmon and steelhead, and concluded that the unanticipated flow reduction event would likely not have resulted in significant adverse impacts to spring-run or fall-run Chinook salmon spawning, fall-run Chinook salmon adult pre-spawn staging, or over-summer juvenile rearing for either spring-run Chinook salmon or steelhead. Modifications were made by Yuba Water staff to the equipment that malfunctioned to avoid or minimize the potential for future similar equipment malfunctions.
- March 14, 2022 Flow Fluctuation Deviation – An equipment malfunction of the Narrows 2 Full Bypass fixed-cone valve (FCV) ultimately resulted in an unanticipated increase in flow at the Smartsville Gage from 730 cfs to 920 cfs, and the maximum 15% flow fluctuation limit (relative to the daily average flow) was exceeded for approximately 30 minutes. Yuba Water evaluated the event for potential adverse environmental impacts and concluded that the event would likely not have resulted in

significant adverse impacts due to the relatively short duration of the event and the limited effect of the flow increase on stage.

- January 4, 2023 Minimum Flow Deviation – An equipment malfunction at the Narrows 2 Powerhouse following a transmission line disturbance (likely high winds) that caused the generator to trip offline ultimately resulted in flow at the Smartsville Gage dropping below the maximum 15% reduction allowed (relative to the daily average flow) for a total of about 35 minutes. Yuba Water evaluated the event for potential adverse impacts to Chinook salmon spawning/embryo incubation and fry rearing and concluded that the unanticipated flow reduction event would likely not have resulted in significant adverse impacts to the spring-run or fall-run Chinook salmon spawning or fry rearing lifestages.

As described above, occasional equipment failures at the Narrows 2 or Narrows 1 powerhouses have resulted in flow reductions or fluctuations below the Narrows 2 or Narrows 1 facilities, but flow reductions associated with these events have generally been extremely brief in duration. Recent events have been determined by Yuba Water to have not significantly adversely affected anadromous salmonid populations through the mechanisms of fry and/or juvenile stranding/isolation or redd dewatering. In the one instance when Yuba Water and FERC determined that an unanticipated forced outage at one of Yuba Water's facilities resulted in adverse impacts to fisheries resources in the lower Yuba River, FERC required Yuba Water to develop and implement habitat enhancement in the lower Yuba River to fully mitigate for the adverse impacts. Additionally, FERC's draft YRDP license Article 409 would require Yuba Water to develop, through consultation with USACE, CDFW, NMFS, USFWS, and SWRCB, a plan for preventing fish stranding downstream of Englebright Dam due to YRDP operations (including unanticipated forced outages) and for reporting potential fish stranding events to USFWS, NMFS, and CDFW. Because these conditions would be implemented under the Proposed Projects and alternatives, and because the frequency of unanticipated forced outages and associated flow fluctuations is not expected to increase under the Proposed Projects or alternatives, the potential for adverse impacts to fisheries resources in the lower Yuba River is not expected to increase under these scenarios relative to the bases of comparison. Consequently, potential impacts to fisheries resources in the lower Yuba River through the mechanisms of fry and juvenile stranding/isolation and redd dewatering due to unanticipated forced outages are not carried forward for detailed analysis in this chapter.

Effects Related to License Conditions/Implementation Plans

YRDP

As described in Chapter 2, Yuba Water would be required to develop and/or implement a number of license conditions and implementation plans once a new FERC license is issued for the YRDP. Several of the conditions (AR1, AR2, AR3, AR4, AR9, AR10, AR11, AR12, WR2, WR3, WR5, and WR6) would affect the manner in which Yuba Water operates the YRDP, and the effects of those conditions on operations have been incorporated into the YRDP Operations Model. Potential impacts to fisheries and aquatic resources that could result from these conditions are analyzed through assessments of simulated flows and water temperatures. Other conditions associated with license implementation plans that may not result in changes in operations (and thereby cannot easily be analyzed through assessments of simulated flows and water temperatures), but which

have the potential to result in effects to fisheries and aquatic resources in the lower Yuba River through activities associated with plan implementation (based on descriptions provided in Chapter 2 and Yuba Water (2017)), include:

- AR8 – Implement Lower Yuba River Aquatic Monitoring Plan
- Develop and Implement a New Lower Yuba River Riparian Restoration Plan (FERC Article 412)
- Develop and Implement a New Comprehensive Large Woody Material Enhancement Plan for the lower Yuba River (FERC Article 410)
- WR7 – Implement Water Temperature Monitoring Plan
- WR8 – Implement Water Quality Monitoring Plan
- WR9 – Implement Drought Management Plan

The potential effects of Yuba Water's implementation of these plans under the Proposed Projects are analyzed through assessments of the extent to which activities associated with plan implementation could result in direct or indirect impacts to fisheries or aquatic habitat, changed conditions relative to the bases of comparison, as well as any identified BMPs or impact avoidance and minimization measures.

Narrows Project

As described in Chapter 2, Yuba Water has proposed to include in a new Narrows Project FERC license certain existing license conditions with modifications, as well as several new conditions. The proposed conditions that have the potential to affect aquatic habitat conditions in the lower Yuba River (Condition 1 – Supplemental Flows, Condition 2 – Ramping Rates) are continuations of requirements in the existing FERC license for the Narrows Project, and therefore would not result in changed conditions in the lower Yuba River under the Proposed Projects relative to the Existing Condition. Consequently, these conditions are not carried forward for detailed analysis in this chapter.

9.4.2.3.4 Areas Downstream of the Lower Yuba River

To evaluate the potential for the Proposed Projects and alternatives to influence fisheries habitat conditions in areas downstream of the lower Yuba River, changes in simulated mean monthly Yuba River outflows and water temperatures under the Proposed Projects and alternatives were used to estimate the extent to which flows and water temperatures in the Feather River downstream of the lower Yuba River could be influenced. As described in Chapter 4, modeled changes in mean monthly flows from the lower Yuba River under the Proposed Projects and Alternative 1 scenarios represent minimal proportions of Feather River flows downstream of the lower Yuba River confluence. Similarly, based on an analysis of modeled monthly average water temperatures in the lower Yuba River at Marysville and average flow and water temperature data on the Feather River upstream of the lower Yuba River during the period of May through November, the Proposed Projects and Alternative 1 scenarios also would not result in notable changes in Feather River water temperatures immediately below the lower Yuba River (see Chapter 4). Therefore, there would also not be notable flow or water temperature-related changes in the Sacramento River

downstream of the Feather River confluence or in the Delta under the Proposed Projects or Alternative 1 relative to the bases of comparison.

Alternative 2 would result in greater changes in Yuba River outflow relative to the bases of comparison compared to the Proposed Projects and Alternative 1. Changes in Feather River and Sacramento River flows due to changes in modeled Yuba River outflow resulting from implementation of Alternative 2 and resultant changes in fisheries habitat availability or thermal suitability were evaluated by examining the proportionate increase in Feather River and Sacramento River flows.

9.4.3 Impact Indicators and Significance Criteria

The previously-described impact assessment methods and evaluation guidelines have been developed as a means to assess potential impacts of the Proposed Projects and the alternatives on fisheries resources associated with construction activities and operations of the YRDP and Narrows Project. Operations-related evaluations include multiple impact indicators by species and geographic location. Discussions of YRDP operations-related impacts are separated by: (1) simulated operations-related impacts (i.e., flow, water temperature and reservoir storage-related changes); and (2) other operations-related impacts (i.e., impacts associated with reservoir operations, powerhouse operations, diversion dam operations, and implementation of license conditions/implementation plans) that are not addressed through changes in simulated habitat conditions. As previously described, operations-related impacts of the Narrows Project are limited to license implementation plans.

The impact indicators summarized below are used to evaluate whether the Proposed Projects and alternatives would result in impacts to fisheries resources, species guilds[10], or particular species and lifestages by geographic location associated with: (1) simulated operations; and (2) other operations-related activities.

9.4.3.1 Simulated Operations Impacts

9.4.3.1.1 YRDP Reaches Upstream of Englebright Dam

Simulated operations impact indicators for fisheries resources in YRDP reaches upstream of Englebright Dam included changes in: (1) location-specific and season-specific habitat availability averages by WYT and habitat exceedance distributions; and (2) location-specific and season-specific water temperature exceedance distributions relative to WTI values. Changes in the following habitat availability impact indicators of about 10% were considered to be indicators of potentially substantial effects, and changes in frequency of exceedance of the following WTI values (or in frequency of occurrence within a WTI range) of about 10% or greater were considered

[10] Group of species that exploit similar resources or exhibit similar characteristics (e.g., hardhead/pikeminnow, warmwater reservoir fisheries, coldwater reservoir fisheries).

to be potentially substantial[11]. However, all season-specific changes in habitat availability and thermal suitability at all locations evaluated were considered together to identify impact determinations for each species in each river.

- Rainbow trout in the North Yuba River
    - Habitat availability for adult, spawning and juvenile lifestages below NBBD
    - Thermal suitability for adult and juvenile lifestages (68°F WTI value) below NBBD, and above the upper Yuba River
    - Thermal suitability for spawning (57°F WTI value) below NBBD, and above the upper Yuba River
- Sacramento sucker in the North Yuba River
    - Habitat availability for adult and juvenile lifestages below NBBD
    - Thermal suitability for adult and juvenile lifestages (61-77°F preferred range) below NBBD, and immediately upstream of the confluence with the Middle Yuba River
- Hardhead/Sacramento pikeminnow in the North Yuba River
    - Habitat availability for adult and juvenile lifestages below NBBD
    - Thermal suitability for adult and juvenile lifestages (61-77°F preferred range) below NBBD, and immediately upstream of the confluence with the Middle Yuba River
    - Thermal suitability for spawning hardhead (59-64°F preferred range) below NBBD, and immediately upstream of the confluence with the Middle Yuba River
- Rainbow trout in Oregon Creek
    - Habitat availability for adult, spawning and juvenile lifestages below LCDD, in Celestial Valley, and immediately upstream of the confluence with the Middle Yuba River
    - Thermal suitability for adult and juvenile lifestages (68°F WTI value) below LCDD, and immediately upstream of the confluence with the Middle Yuba River

[11] Potentially substantial changes in water temperature suitabilities are identified based upon changes in the frequency of exceeding species and lifestage-specific WTI values of 10% or more under the Proposed Projects or the alternative, relative to a basis of comparison (SWRCB 2016; Yuba Water 2017; DWR and Reclamation 2017). A change in the frequency of exceedance of 10% is assumed to be high enough to reveal the potential for a substantial change, yet minimize the potential for identifying a change due to error or uncertainty in the analytical methodologies and modeling (SWRCB 2016). Additionally, consistent with previous environmental documentation (e.g., SWRCB 2016; DWR and Reclamation 2017), changes in a habitat availability index of 10% or more are identified under the Proposed Projects and the alternatives, relative to the bases of comparison. However, a 10% difference in the probability of exceeding a WTI value or habitat availability index does not necessarily constitute an impact. Impact determinations are based upon consideration of all evaluated impact indicators for all lifestages of a particular species. An impact is considered potentially significant if implementation of the Proposed Projects or an alternative would adversely affect a species, relative to the basis of comparison, in consideration of all evaluated impact indicators for all lifestages.

    - Thermal suitability for spawning (57°F WTI value) below LCDD, and immediately upstream of the confluence with the Middle Yuba River
- Sacramento sucker in Oregon Creek
    - Habitat availability for adult and juvenile lifestages below LCDD
    - Thermal suitability for adult and juvenile lifestages (61-77°F preferred range) below LCDD, and immediately upstream of the confluence with the Middle Yuba River
- Rainbow trout in the Middle Yuba River
    - Habitat availability for adult, spawning and juvenile lifestages below OHDD, upstream of Oregon Creek, and between Oregon Creek and the upper Yuba River
    - Thermal suitability for adult and juvenile lifestages (68°F WTI value range) below OHDD, and above the upper Yuba River
    - Thermal suitability for spawning (57°F WTI value) below OHDD, and above the upper Yuba River
- Sacramento sucker in the Middle Yuba River
    - Habitat availability for adult and juvenile lifestages below OHDD, upstream of Oregon Creek, and between Oregon Creek and the upper Yuba River
    - Thermal suitability for adult and juvenile lifestages (61-77°F preferred range) below OHDD, and above the upper Yuba River
- Rainbow trout in the upper Yuba River
    - Habitat availability for adult, spawning and juvenile lifestages between the North Yuba River/Middle Yuba River confluence and New Colgate Powerhouse, and below New Colgate Powerhouse
    - Thermal suitability for adult and juvenile lifestages (68°F WTI value) below the North Yuba River/Middle Yuba River confluence, and below New Colgate Powerhouse
    - Thermal suitability for spawning (57°F WTI value) below the North Yuba River/Middle Yuba River confluence, and below New Colgate Powerhouse
- Sacramento sucker in the upper Yuba River
    - Habitat availability for adult and juvenile lifestages between the North Yuba River/Middle Yuba River confluence and New Colgate Powerhouse, and below New Colgate Powerhouse
    - Thermal suitability for adult and juvenile lifestages (61-77°F preferred range) below the North Yuba River/Middle Yuba River confluence, and below New Colgate Powerhouse

- Hardhead/Sacramento pikeminnow in the upper Yuba River
    - Habitat availability for adult and juvenile lifestages between the North Yuba River/Middle Yuba River confluence and New Colgate Powerhouse, and below New Colgate Powerhouse
    - Thermal suitability for adult and juvenile lifestages (61-77°F preferred range) below the North Yuba River/Middle Yuba River confluence, and below New Colgate Powerhouse
    - Thermal suitability for spawning hardhead (59-64°F preferred range) below the North Yuba River/Middle Yuba River confluence, and below New Colgate Powerhouse

9.4.3.1.2 New Bullards Bar Reservoir

Simulated operations impact indicators for fisheries resources in NBBR for the Proposed Projects and alternatives relative to the bases of comparison included: (1) simulated mean monthly reservoir WSE reductions of sufficient magnitude and frequency to substantially affect warmwater fish spawning, in consideration of whether the frequency of 6 ft or greater monthly reductions during March through June occurred with substantial frequency (differences of about 10% or more[12] over one or more months); (2) simulated mean monthly reservoir storage reductions of sufficient magnitude and frequency[13] to substantially affect resident coldwater reservoir fisheries, in consideration of whether differences in storage during April through November were sufficient to substantially affect coldwater pool volume and associated coldwater fisheries habitat availability; and (3) simulated mean monthly reservoir WSE reductions during March through June of sufficient magnitude and frequency[14] to substantially affect migratory fish species' access to NBBR tributaries.

- Warmwater fisheries in New Bullards Bar Reservoir
    - Changes in habitat conditions for warmwater fish spawning in NBBR based on changes in mean monthly simulated reservoir WSEs during March through June sufficient to substantially affect warmwater fisheries habitat in NBBR
- Coldwater fisheries in New Bullards Bar Reservoir
    - Changes in habitat conditions for coldwater fish residence in NBBR based on changes in mean monthly simulated reservoir storages during April through November sufficient to substantially affect coldwater fisheries habitat in NBBR
- Fish Access to New Bullards Bar Reservoir tributaries

[12] Although SWRCB (2016) used a fluctuation in WSEs of 15 ft or more, they also used a 10% increase in the frequency of WSE reduction as an indicator of significant change.

[13] A change in reservoir storage of about 10% or more over one or more months during the period of evaluation was used as an indicator of potential impact to reservoir coldwater fish habitat availability. SWRCB (2016) used a 10% or more reduction in end-of-September storage as an indicator of potentially significant impact to coldwater habitat availability.

[14] A change in reservoir storage of about 10% or more over one or more months during the period of evaluation was used as an indicator of potential impact to reservoir coldwater fish habitat availability (SWRCB 2016). Consequently, it was assumed that a change in reservoir WSEs of about 10% or more over one or more months during the period of evaluation serves as an applied indicator of potential impact to reservoir tributary fish habitat accessibility in this DEIR.

- Changes in monthly reservoir WSEs during March through June sufficient to substantially affect reservoir tributary access for migratory fish species

9.4.3.1.3 YB/DS Reaches Upstream of the YRDP

For Alternative 1 programmatic analyses, impact indicators for fisheries resources in YB/DS reaches upstream of the YRDP (i.e., YB/DS reaches in the Middle Yuba River upstream of OHDD, South Yuba River upstream of Englebright Reservoir, Canyon Creek and Fordyce Creek) included changes in the following location-specific and species/lifestage-specific habitat availability during April and May of Dry and Critical WYs. Due to the flexibility in how Alternative 1 could be implemented by the YB/DS projects in the reaches upstream of the YRDP, changes in flow-dependent habitat availability were based on directional changes in habitat associated with directional changes in flows (i.e., increases or decreases in habitat based on increases or decreases in flow) relative to the Future Baseline[15]. The programmatic assessment of whether impacts would be expected to be substantial considered the potential directional changes in habitat availability, the frequency of potential changes in habitat based on the occurrence of specific WYTs, the duration of potential changes in habitat relative to lifestage-specific periods, the potential flexibility in operations under Alternative 1, the focal species/lifestages and reaches targeted for enhancement and evaluated in the YB/DS FERC relicensing (FERC 2014), and whether special-status fish species have the potential to occur in these reaches.

- Rainbow trout in the Middle Yuba River
  - Habitat availability for adult, spawning and juvenile lifestages in the Jackson Meadows Dam Reach, Milton Diversion Dam Sub-reach, Wolf Creek Sub-reach and Kanaka Creek Sub-reach
- Sacramento sucker in the Middle Yuba River
  - Habitat availability for adult and juvenile lifestages in the Milton Diversion Dam Sub-reach, Wolf Creek Sub-reach and Kanaka Creek Sub-reach
- Hardhead/pikeminnow in the Middle Yuba River
  - Habitat availability for adult and juvenile lifestages in the Kanaka Creek Sub-reach
- Rainbow trout in Canyon Creek
  - Habitat availability for adult and juvenile lifestages in the BSCDD Reach and downstream
- Rainbow trout in Fordyce Creek
  - Habitat availability for adult and juvenile lifestages below Fordyce Lake Dam
- Rainbow trout in the South Yuba River

[15] As discussed in Chapter 4, operations-related impact determinations that rely on modeling for Alternative 1 and Alternative 2 rely on the comparison to the Future Baseline scenario.

    - Habitat availability for adult, spawning and juvenile lifestages in the Jordan Creek Sub-reach, Canyon Creek Sub-reach, Poorman Creek Sub-reach, and Humbug Creek Sub-reach
- Sacramento sucker in the South Yuba River
    - Habitat availability for adult and juvenile lifestages in the Jordan Creek Sub-reach, Canyon Creek Sub-reach, Poorman Creek Sub-reach, and Humbug Creek Sub-reach
- Sacramento pikeminnow in the South Yuba River
    - Habitat availability for adult and juvenile lifestages in the Poorman Creek Sub-reach, and Humbug Creek Sub-reach
- Hardhead in the South Yuba River
    - Habitat availability for adults and juveniles in the Humbug Creek Sub-reach

In addition to flow-dependent habitat availability, another programmatic impact indicator included the extent to which water temperatures could change sufficiently to substantially affect fish species during April and May in the YB/DS reaches. This included consideration of existing water temperature conditions, available water temperature modeling information under potential Alternative 1 conditions and the Future Baseline, and species-specific spatial and temporal distributions in the YB/DS reaches upstream of the YRDP. Consideration was also given to the potential for reservoir storage changes to affect water temperatures in the reaches upstream of the YRDP during summer and fall. The potential for substantial impacts considered the potential relative magnitudes and frequency of changes in water temperatures relative to lifestage-specific periods, thermal suitability conditions under existing conditions or the Future Baseline, and lifestage-specific water temperature tolerances.

9.4.3.1.4 Lower Yuba River

Simulated operations impact indicators for fisheries resources in the lower Yuba River included changes in: (1) season-specific habitat availability averages by WYT and habitat exceedance distributions; and (2) location-specific and season-specific water temperature exceedance distributions relative to WTI values of sufficient magnitude and frequency to substantially affect the following species-specific lifestages at the following locations. As described above in Section 9.4.3.1.1, changes in the following habitat availability impact indicators of about 10% were considered to be indicators of potentially substantial effects, and changes in frequency of exceedance of the following WTI values (or in frequency of occurrence within a WTI range) of about 10% or greater were considered to be potentially substantial. However, all season-specific changes in habitat availability and thermal suitability at all locations evaluated were considered together to identify impact determinations for each species in each river.

- Spring-run Chinook Salmon
    - Preferred habitat availability for spawning (above DPD), fry and juvenile lifestages

    - Thermal suitability for adult immigration at DPD and Marysville (64 and 68°F WTI values) and adult holding at Smartsville and DPD (61 and 65°F WTI values)
    - Thermal suitability for spawning and embryo incubation at Smartsville and Parks Bar (56 and 58°F WTI values)
    - Longitudinal extent of thermally suitable 56 and 58°F habitat for spawning and initial incubation during September through October
    - Thermal suitability for juvenile rearing at Smartsville and DPD (61 and 65°F WTI values)
    - Thermal suitability for juvenile downstream movement at DPD and Marysville (61 and 65°F WTI values)
    - Thermal suitability for smoltification at Smartsville and DPD (63 and 68°F WTI values)
- Fall-run Chinook Salmon
    - Preferred habitat availability for spawning, fry and juvenile lifestages
    - Thermal suitability for adult immigration and staging at DPD and Marysville (64 and 68°F WTI values)
    - Thermal suitability for spawning and embryo incubation at Smartsville and DPD (56 and 58°F WTI values)
    - Thermal suitability for juvenile rearing at Smartsville and DPD (61 and 65°F WTI values)
    - Thermal suitability for juvenile downstream movement at DPD and Marysville (61 and 65°F WTI values)
- Steelhead
    - Preferred habitat availability for spawning (above DPD), fry and juvenile lifestages
    - Thermal suitability for adult immigration at DPD and Marysville (64 and 68°F WTI values) and adult holding at Smartsville and DPD (61 and 65°F WTI values)
    - Thermal suitability for spawning and embryo incubation at Smartsville and Parks Bar (54 and 57°F WTI values)
    - Thermal suitability for juvenile rearing at Smartsville and Parks Bar (65 and 68°F WTI values)
    - Thermal suitability for juvenile downstream movement at DPD and Marysville (65 and 68°F WTI values)
    - Thermal suitability for smoltification at Smartsville and Parks Bar (52 and 55°F WTI values)

- Green Sturgeon
    - Habitat availability for adult holding and spawning below DPD
    - Thermal suitability for adult immigration and holding at DPD and Marysville (61°F WTI value)
    - Thermal suitability for spawning and embryo incubation at DPD and Marysville (63°F WTI value)
    - Thermal suitability for post-spawn holding at DPD and Marysville (61°F WTI value)
    - Thermal suitability for juvenile rearing and emigration at DPD and Marysville (66°F WTI value)
- Lamprey
    - Habitat availability for spawning and ammocoete rearing
    - Thermal suitability for adult immigration at DPD and Marysville (60°F WTI value)
    - Thermal suitability for spawning and embryo incubation at Smartsville and DPD (64°F WTI value)
    - Thermal suitability for ammocoete rearing at DPD and Marysville (72°F WTI value)

9.4.3.1.5 Areas Downstream of the Lower Yuba River

Impact indicators for fisheries resources in areas downstream of the lower Yuba River include the estimated magnitude of proportionate changes in historical Feather River and Sacramento River mean monthly flows due to changes in modeled mean monthly Yuba River outflow resulting from implementation of the Proposed Projects and alternatives sufficient to substantially affect fisheries resources in the Feather River downstream of the Yuba River, in the Sacramento River downstream of the Feather River, and in the Delta. Proportionate changes in monthly flow in the Feather and Sacramento rivers of about 10% or more over the majority of an evaluated lifestage were considered to be indicators of potentially substantial effects to fisheries migratory or habitat conditions. Changes in flow of 10 percent or greater have been used to indicate potential substantial changes in simulated mean monthly flows by various environmental documents as an appropriate criterion to evaluate flow changes (USFWS et al. 1999; San Joaquin River Group Authority 1999; Reclamation and Freeport Regional Water Authority 2003; Yuba Water et al. 2007; Sites Project Authority and Bureau of Reclamation 2017; SWRCB 2016).

9.4.3.2 Other Operations-Related Impacts

9.4.3.2.1 YRDP Reaches Upstream of Englebright Dam

Other operations-related impact indicators for fisheries resources in YRDP reaches upstream of Englebright Dam included: (1) changes in YRDP operations that would affect spills at NBBD sufficient to substantially affect fish stranding, temporary loss of habitat or restricted access to habitat, and reduced spawning success in the North Yuba River downstream of NBBD; (2) changes

in YRDP operations at New Colgate Powerhouse sufficient to substantially affect fish stranding in the upper Yuba River downstream of New Colgate Powerhouse; (3) changes in YRDP operations at OHDD and the Lohman Ridge Tunnel on the Middle Yuba River and at LCDD and the Camptonville Tunnel on Oregon Creek sufficient to substantially affect fish passage, fish entrainment, fish stranding, or substantially affect habitat conditions related to changes in sediment and woody material management for fish species of primary management concern in the Middle Yuba River and Oregon Creek; and (4) changes to fisheries habitat conditions or direct effects to fish species due to license implementation plans sufficient to substantially impact fish species or their habitat relative to existing conditions. Determination of whether substantial impacts would occur to fish species and their habitat associated with these operations-related activities under the Proposed Projects relative to existing conditions was based on several considerations, including how the activity would alter habitat conditions or result in direct effects to fish species relative to existing conditions, whether effects would be temporary or permanent, the expected frequency of occurrence of an activity, and the timing of an activity relative to lifestage periods of fish species of management concern. For activities that could be evaluated based on hydrologic model output (e.g., changes in ramping rates and associated fish stranding potential), hydrologic modeling daily time-series were examined during relevant time periods.

9.4.3.2.2 Englebright Reservoir

Other operations-related impact indicators for reservoir fisheries included changes in simulated mean monthly Englebright Reservoir WSEs of sufficient magnitude and frequency to substantially affect entrainment of fish into the Narrows 2 Power Tunnel or to substantially affect entrainment of fish into USACE's Englebright Intake, in consideration of Yuba Water's gill net sampling in Englebright Reservoir.

9.4.3.2.3 YB/DS Reaches Upstream of the YRDP

For the programmatic analysis of YB/DS operations under Alternative 1, other operations-related impact indicators for fisheries resources in YB/DS reaches included changes in available simulated or estimated hydrology during April and May of Dry and Critical WYs sufficient to be expected to substantially affect redd scour, redd dewatering and juvenile stranding/isolation in the Middle Yuba River below Jackson Meadows Dam, Canyon Creek below Bowman Lake and the BSCDD, Fordyce Creek below Fordyce Lake Dam, and the South Yuba River below Spaulding Dam to Englebright Reservoir. In general, changes in simulated daily flow time-series under potential Alternative 1 conditions relative to the Future Baseline were used to identify whether substantial changes in the hydrograph would necessarily occur with sufficient frequency to substantially affect fish species of management concern, with consideration of the variation in simulated flows under the Future Baseline during Dry and Critical WYs as well as during wetter WYTs.

9.4.3.2.4 Lower Yuba River

Other operations-related impact indicators for fisheries resources in the lower Yuba River included: (1) changes in YRDP and Narrows Project operations sufficient to substantially affect anadromous salmonid redd scour in the lower Yuba River; (2) changes in YRDP and Narrows Project operations sufficient to substantially affect anadromous salmonid stranding/isolation/redd dewatering due to unanticipated forced outages; and (3) changes to fisheries habitat conditions or

direct effects to fish species due to YRDP and Narrows Project license conditions and/or implementation plans (i.e., associated with short-term physical disturbances or due to long-term changes in habitat quality) sufficient to substantially impact fish species or their habitat relative to the bases of comparison. Determination of whether substantial impacts would occur to fish species and their habitat associated with these operations-related activities under the Proposed Projects and alternatives relative to the bases of comparison was based on several considerations, including how the activity would alter habitat conditions or result in direct effects to fish species, whether effects would be temporary or permanent, the expected frequency of occurrence of an activity, and the timing of an activity relative to lifestage periods of fish species of management concern. For example, short-term effects to physical habitat conditions occurring with limited frequency or in limited areas that are minimized with BMPs and impact avoidance measures would generally not be considered substantial. By contrast, long-term changes to physical habitat conditions (beneficial or adverse) utilized heavily by fish species of management concern would be more likely to be considered substantial.

9.4.3.3 Thresholds of Significance

The thresholds of significance for impacts to fisheries resources are based on the environmental checklist in Appendix G to the State CEQA Guidelines, as amended[16]. An impact resulting from the implementation of an alternative would be significant if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any fish species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, the USFWS, or NMFS. An effect would be substantial if it would result in a substantial permanent reduction in area and quality of suitable habitat for special-status fish species.

- Interfere substantially with the movement of any native resident or migratory fish species.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Fisheries significance determinations were based on consideration of all evaluated impact indicators for all lifestages for a particular species by geographic location for each Project and project component (i.e., construction and operations). Operations-related impact determinations that rely on modeling for the Proposed Projects were made relative to both the Existing Condition and the Future Baseline separately. Operations-related impact determinations that do not rely on modeling for the Proposed Projects and alternatives were made relative to the Existing Condition and Future Baseline in combination (i.e., one impact determination is made and presented for both baselines). As discussed in Chapter 4, operations-related impact determinations that rely on or are informed by modeling for Alternative 1 and Alternative 2 relied on the comparison to the Future Baseline scenario. Because simulated riverine operations-related impacts often include consideration of flow-dependent habitat availability and thermal suitability by seasonal lifestage-

[16] Although impacts to riparian vegetation are addressed in the fisheries analyses to the extent that riparian vegetation is incorporated into fisheries habitat-flow relationships utilized in this DEIR, impacts to riparian vegetation and sensitive natural communities are specifically addressed in Chapter 10 (Biological Resources).

specific periods for multiple lifestages, key lifestages, limiting factors and stressors, and peak lifestage timing were all considered in impact determinations based on available information.

9.5 Environmental Impact Analysis

9.5.1 Proposed Projects Analysis

9.5.1.1 Construction-Related Impacts

9.5.1.1.1 Areas Upstream of Englebright Dam

YRDP Impact FISH-PP-1: Construction-related impacts in areas upstream of Englebright Dam.

As described in Chapter 2, Yuba Water's Proposed YRDP Project includes the construction of several facilities, including the New Colgate Powerhouse Tailwater Depression System, modifications to the fish release outlets at OHDD and LCDD, modifications to the Lohman Ridge Diversion Tunnel Intake, and construction of various recreation facilities. The potential construction-related effects of each of these activities are discussed below.

New Colgate Powerhouse Tailwater Depression System

As described in Chapter 2 and Yuba Water (2017), construction activities associated with the New Colgate Powerhouse Tailwater Depression System will be confined to the powerhouse, yard, and immediate vicinity (i.e., there would be no in-water work or work in the immediate vicinity of flowing water). Construction of the Tailwater Depression System is anticipated to occur during planned New Colgate Powerhouse outages and would not necessitate any additional operational outages. As such, the potential for activities associated with the construction of the New Colgate Powerhouse Tailwater Depression System to disturb or otherwise directly or indirectly impact fish species or their habitat in the upper Yuba River in the vicinity of New Colgate Powerhouse is anticipated to be negligible, and any effects would be temporary and localized.

Modifications to the Our House and Log Cabin Diversion Dams Fish Release Outlets

As described in Chapter 2 and Yuba Water (2017), all work associated with the construction of modified fish release outlets at Our House and Log Cabin diversion dams would be conducted in the dry (i.e., no in-water work) and during the late summer when the minimum flow release from each dam is low and equal to inflow into the impoundments. Yuba Water would draw down the impoundments (using the low-level outlets) to isolate the work area from the water of the impoundments, and would construct temporary platforms from which to conduct construction activities. Construction work for each dam's fish release valve would occur over a 6-month period within a single year. Consequently, the potential for activities associated with the construction of modified fish release outlets at Our House and Log Cabin diversion dams to disturb or otherwise directly or indirectly impact fish species or their habitat in the immediate vicinity of the Our House and Log Cabin diversion dams is anticipated to be low to negligible, and any effects would be temporary and localized. Additionally, as described in Chapter 2, implementation of impact avoidance/minimization measures would further minimize any potential impacts on fish and aquatic resources during construction of the modified fish release outlets.

Modifications to the Lohman Ridge Diversion Tunnel Intake

As described in Chapter 2 and Yuba Water (2017), construction activities associated with modifications to the Lohman Ridge Diversion Tunnel intake would be conducted in the dry (i.e., no in-water work) and during the late summer when inflow into the OHDD impoundment is low and when no diversion through the Lohman Ridge Diversion Tunnel would be occurring. Yuba Water would draw down the OHDD impoundment (using the low-level outlet) to isolate the work area from the water, and would construct temporary platforms from which to conduct construction activities. Construction work for the modified tunnel intake would occur within a single year within 6 months. Consequently, the potential for activities associated with the construction of the modified diversion tunnel intake to disturb or otherwise directly or indirectly impact fish species or their habitat in the immediate vicinity of the tunnel intake is anticipated to be low to negligible, and any effects would be temporary and localized. Additionally, as described in Chapter 2, implementation of impact avoidance/minimization measures would further minimize any potential impacts on fish and aquatic resources during construction of the modified fish release outlets.

Recreation Facilities Construction

As described in Chapter 2 and Yuba Water (2017), most of the YRDP recreation facilities to be rehabilitated or constructed during the term of the new YRDP license would be upland and away from water (and therefore fish and aquatic resources). However, construction activities associated with the rehabilitation of boat launch facilities at NBBR would occur in proximity to water and have the potential to result in effects to fish and aquatic resources. Yuba Water's Condition RR1 provides a detailed site planning, consultation, and implementation process that ensures the construction-related activities address all applicable environmental review and required permitting prior to construction. Additionally, as described in Chapter 2, implementation of impact avoidance/minimization measures would further minimize any potential impacts on fish and aquatic resources during construction activities associated with rehabilitation of boat launch facilities at NBBR.

CEQA Conclusion

YRDP construction-related activities upstream of Englebright Dam would result in temporary and localized effects and would not substantially disturb or otherwise directly or indirectly impact fish species, their habitat, or migratory behaviors. Consequently, construction-related activities under the Proposed Projects would result in **less-than-significant** impacts to fisheries and aquatic resources upstream of Englebright Dam relative to the Existing Condition and no mitigation is required.

Narrows Impact FISH-PP-1: Construction-related impacts in areas upstream of Englebright Dam.

Because there is no construction associated with the Narrows Project, there would be **no impacts** to fisheries resources upstream of Englebright Dam under the Narrows Project due to construction-related activities relative to the Existing Condition.

9.5.1.1.2 Lower Yuba River

YRDP Impact FISH-PP-2: Construction-related impacts in the lower Yuba River.

Given the minimal and less than significant impacts of construction-related activities upstream of Englebright Dam and associated lack of propagation of those effects into the lower Yuba River, and given that there are no construction activities under the YRDP downstream of Englebright Dam, construction-related activities under the Proposed Projects would result in **less-than-significant** impacts to fisheries and aquatic resources in the lower Yuba River relative to the Existing Condition and no mitigation is required.

Narrows Impact FISH-PP-2: Construction-related impacts in the lower Yuba River.

Because there is no construction associated with the Narrows Project, there would be **no impacts** to fisheries resources downstream of Englebright Dam under the Narrows Project due to construction-related activities relative to the Existing Condition.

9.5.1.2 Operations-Related Impacts

9.5.1.2.1 Simulated Habitat Conditions under Proposed Projects (existing) compared to the Existing Condition

YRDP Reaches Upstream of Englebright Dam

Flow and water temperature model results were examined for the YRDP reaches upstream of Englebright Dam to evaluate potential impacts to target fish species and lifestages that could occur under the Proposed Projects (existing) scenario relative to the Existing Condition scenario[17]. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.1.1 of **Appendix 9C** (pages 9C-1 through 9C-13). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for YRDP reaches upstream of Englebright Dam under the Proposed Projects (existing) scenario relative to the Existing Condition scenario are shown in Figures C1-1 through C1-209 and Tables C1-1 through C1-177 in Appendix 9D.

As described in Appendix 4B (see Tables C1-Flow-5 through C1-Flow-13 and Tables C6-Temp-1 through C1-Temp-15 in Appendix 4C), the Proposed Projects would generally result in the following flow and water temperature conditions relative to the Existing Condition:

- North Yuba River downstream of NBBD
    - Monthly average flows are substantially higher during July through November over the entire simulation period and during most WYTs. Flows during December through June are typically lower during Wet and Above Normal WYs and mostly higher during Below Normal, Dry and Critical WYs. Average monthly flows are particularly higher during June through September of Below

[17] The modeling scenarios, comparisons, and rationale for the comparisons are fully described in Chapter 4.

Normal, Dry and Critical WYs, when flows often increase from about 8-9 cfs up to about 32-62 cfs.

  - Monthly average water temperatures are substantially lower during June through October over the entire simulation period and by WYT and are warmer during April and May of Wet WYs at the above Yuba River node. Water temperatures are particularly lower during June through September when water temperatures over the entire simulation period are reduced by about 5 to 6°F below NBBD and by about 10 to 14°F at the above Yuba River node.

- Oregon Creek downstream of LCDD
  - Monthly average flows are substantially higher during March through July and lower during November and December over the entire simulation period. During November and December flows are lower during Wet and Above Normal WYs but are higher during Below Normal, Dry and Critical WYs. Flows are consistently higher during January through June. Average monthly flows are particularly higher during April through June when flows below LCDD often increase by approximately 10-30 cfs (about 50-200% higher) except for Wet WYs when flows significantly increase by about 30-90 cfs (about 100 to over 300 percent higher).
  - Monthly average water temperatures in Oregon Creek are similar (e.g., different by less than 0.5°F) during most months over the entire simulation period and by water year type but are typically cooler during June through October during most WYTs, particularly below LCDD. Water temperatures also are similar or cooler during June and October and are cooler by about 1-3°F during July through September below LCDD over most of the monthly exceedance distributions.

- Middle Yuba River downstream of OHDD
  - Monthly average flows are higher year-round over the entire simulation period and by WYT. Average monthly flows are particularly higher during November, December and April through July when average monthly flows increase by about 40 to 190 cfs (50 to more than 150 percent higher) depending on location.
  - Monthly average water temperatures in the Middle Yuba River in the reaches downstream of OHDD are typically equivalent or similar (e.g., different by less than 0.5°F) during most months over the entire simulation period and by water year type but are cooler during April through July of most WYTs below Oregon Creek. Water temperatures also are lower (by more than 0.5°F) at the above YR node over most of the exceedance distributions during April through June and over about half of the July distribution.

- Upper Yuba River
  - Monthly average flows in the upper Yuba River upstream of New Colgate Powerhouse (Colgate) are substantially higher during April through December over the entire simulation period and by WYT and are higher year-round during drier WYTs. Average monthly flows are particularly higher during July and

August when monthly average flows increase by approximately 100 to 150 percent (about 50-80 cfs higher). Monthly average flows downstream of Colgate are typically similar during all months during most WYTs.

- Monthly average water temperatures in the upper Yuba River upstream of Colgate are lower during October, April and May and are substantially lower during June through September over the entire simulation period and by WYT, particularly at the upstream node (below MYR) where water temperatures over the entire simulation period are reduced by about 6-9°F. Monthly average water temperatures downstream of Colgate are similar during most months but are cooler during November and December and are warmer during April through June.

YRDP Impact FISH-PP-3: Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, rainbow trout were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Existing Condition.

- More suitable conditions for rainbow trout in the North Yuba River due to more suitable habitat availability conditions, including higher or substantially higher amounts of adult (19-44% higher during summer and fall) and juvenile (12-24% higher during winter, summer and fall) rainbow trout habitat during most seasons, and higher (7-10% higher) rainbow trout spawning habitat in all WYTs, and more suitable thermal suitabilities for adults and juveniles during summer, and for spawning.

- More suitable conditions for rainbow trout in Oregon Creek due to similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability for spawning (4-19% more), and improved thermal suitability for adults and juveniles during summer (about 30% reduction in exceedance of 68°F) below LCDD.

- Slightly more suitable conditions for rainbow trout in the Middle Yuba River due to similar or less suitable habitat availability conditions for juveniles (1-10% less habitat), improved habitat availability conditions for adults in the upper reaches (7-23% more habitat) and for spawning in the lowermost reach (17% more habitat), and similar or slightly improved thermal suitability conditions.

- Overall more suitable conditions for rainbow trout in the upper Yuba River due to more suitable habitat availability for adults (13-22% more habitat during summer and fall), less suitable habitat availability for juveniles (7-12% less habitat) upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate (75% lower exceedance of 68°F), and similar habitat availability and thermal suitability conditions for all rainbow trout lifestages downstream of Colgate. Improved water temperature conditions for rainbow trout in the upper Yuba

River was a primary management objective of the Relicensing Participants' (including USFWS, USFS, CDFW, BLM) *Minimum Streamflows for the North Yuba River* condition, which balanced instream habitat and water temperature conditions in the North Yuba River reach and upper Yuba River downstream of the confluence of the North Yuba River and Middle Yuba River (USDOI 2017; USFS 2018).

Overall, rainbow trout habitat conditions would be more suitable in the YRDP reaches due to increased habitat availability and more suitable water temperature conditions, particularly for the adult and spawning lifestages.

CEQA Conclusion

YRDP operations-related activities in the North Yuba River downstream of NBBD, Oregon Creek downstream of LCDD, Middle Yuba River downstream of OHDD, and upper Yuba River would not substantially disturb or otherwise adversely impact rainbow trout, their habitat, or migratory behaviors under the Proposed Projects when compared to the Existing Condition. Operations-related activities under the Proposed Projects would result in **less-than-significant and potentially beneficial** impacts to rainbow trout in the YRDP reaches upstream of Englebright Dam relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-4: Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, hardhead were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Existing Condition.

- Overall, less suitable habitat conditions for hardhead in a portion of the NBBD Reach of the North Yuba River, where hardhead have not been documented. Although habitat availability would be improved (including about 11-24% more adult habitat and 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. This reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) and adopted by FERC and USACE (2019) targeting the provision of suitable rainbow trout physical habitat and water temperatures in the North Yuba River downstream of NBBD, and providing thermal benefits for rainbow trout in the upper Yuba River downstream of the North Yuba River. The substantial reduction in water temperature in the North Yuba River due to the proposed flow regime was acknowledged and understood by the Relicensing Participants (USDOI 2017; USFS 2018). As stated by USDOI (2017, p. 12) *"…the Resource Agencies balanced the benefit of higher releases for more instream habitat with the need to keep appropriate temperatures in the North Yuba River below New Bullards Bar Dam and the reach of the Yuba River below the confluence*

of the North and Middle Yuba Rivers. The Resource Agencies struck a compromise between making temperatures too cold in the North Yuba River while still providing enough cold water through the reach to provide a benefit to the reach of the [upper] *Yuba River downstream. Any additional water released in the North Yuba River below New Bullards Bar Dam would make temperatures too cold for sufficient adult and juvenile trout growth, any less water would not provide a sufficient benefit to the confluence reach."*

Because hardhead were not observed in the North Yuba River downstream of NBBD during YRDP Relicensing studies, and because suitable water temperatures for hardhead spawning primarily occur downstream of the North Yuba River under existing conditions, it is uncertain whether less suitable thermal habitat conditions for adults and juveniles during summer and early fall would directly impact hardhead in this reach.

- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable habitat availability for adults during summer (about 12% more habitat) and improved thermal suitability for spawning (water temperatures occurring within the 59-64°F range 15% more often) upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate (although water temperatures outside of the hardhead preference range would persist under the Proposed Projects and the Existing Condition for adults and juveniles during spring through fall).

Overall, habitat conditions would be less suitable for hardhead in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with slightly more suitable habitat conditions in the 7.5-mile long upper Yuba River due to improved conditions for adult habitat availability and spawning thermal suitability upstream of Colgate (5.8-mile reach) and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). As described above, based on hardhead life history (including upstream spawning migrations, downstream movement of adults and juveniles subsequent to spawning, and the preference for warm water temperatures) and the generally non-preferred thermal conditions for hardhead spawning in the North Yuba River under existing conditions, hardhead spawning and subsequent rearing is most likely to occur in the upper Yuba River. As described above, hardhead juveniles and adults are present in Englebright Reservoir. Because Englebright Reservoir conditions (e.g., water surface elevations) would not substantially change under the Proposed Projects relative to the Existing Condition, Englebright Reservoir would continue to serve as a refuge for hardhead.

In addition to the slightly more suitable habitat conditions for hardhead in the upper Yuba River, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass (which reportedly prefer summer water temperatures of about 20-27°C (68-81°F) (Moyle 2002). For example, smallmouth bass was found to be one of the most abundant fish species in the upper Yuba River, comprising about 77% of fishes observed in surveys during 2013 near RM 39.6 (immediately downstream of the North Yuba River/Middle Yuba River confluence) and comprising 93-98% of the fish observed during both 2012 and 2013 at RM 35 (upstream of Colgate) (Yuba Water 2017). However, in contrast to the reach upstream of Colgate, smallmouth bass were not observed downstream of Colgate (where water temperatures are much colder) during the snorkel surveys, and only 1 smallmouth bass was captured incidentally during electrofishing surveys (Yuba Water 2017). The introduction of black bass has been identified as

one of the key factors in hardhead population declines in the Central Valley (Moyle 2002; Brown and Moyle 1993), including in the South Yuba River (Moyle et al. 1995). Gard (2004, as cited in Cocherell et al. 2014) found that smallmouth bass limited the abundance of hardhead prey (native cyprinids) in the South Yuba River. Because water temperatures during the summer in the upper Yuba River below the North Yuba River/Middle Yuba River confluence would occur within the 68-81°F smallmouth bass preference range about only 10% of the time relative to about 80% of the time under the Existing Condition, the upper Yuba River may become less preferred by smallmouth bass, which could indirectly benefit hardhead utilization and survival in this reach.

CEQA Conclusion

YRDP operations-related activities would not substantially disturb or otherwise adversely impact hardhead or hardhead, their habitat, or migratory behaviors when compared to the Existing Condition. Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for hardhead in the longer 7.5-mile long upper Yuba River would be slightly more suitable. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit hardhead utilization and survival in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for hardhead colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for hardhead when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to hardhead in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-5: Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento pikeminnow was evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Existing Condition.

- Overall, less suitable conditions for Sacramento pikeminnow in a portion of the NBBD Reach of the North Yuba River. Although habitat availability would be improved (including about 11-24% more adult habitat and 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.

- Similar conditions for pikeminnow in the upper Yuba River due to more suitable physical habitat availability conditions for adults upstream of Colgate during summer (about 12% more habitat), less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer), and similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions would be less suitable for Sacramento pikeminnow in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with similar habitat conditions in the 7.5-mile long upper Yuba River due to generally similar conditions for adults and juveniles but improved adult physical habitat availability upstream of Colgate (5.8-mile reach), and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). Although conditions would be less preferable in the lower portion of the North Yuba River, suitable conditions for Sacramento pikeminnow would still persist in the larger upper Yuba River. As described above for hardhead, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass, which could indirectly benefit Sacramento pikeminnow in this reach.

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento pikeminnow in the longer 7.5-mile long upper Yuba River would be similar. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento pikeminnow in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for Sacramento pikeminnow colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for Sacramento pikeminnow when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento sucker was evaluated in the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD, and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Existing Condition.

- Overall, less suitable conditions for Sacramento sucker in a portion of the NBBD Reach of the North Yuba River. Although physical habitat availability would be improved for juveniles (10-12% more habitat during summer and fall) and adults (10-20% more habitat

during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.

- Similar conditions for Sacramento sucker in Oregon Creek due to overall similar physical habitat availability and water temperature conditions across the three locations evaluated.

- Similar conditions for Sacramento sucker in the Middle Yuba River due to: (1) slightly more suitable adult physical habitat conditions (6-11% more habitat at the uppermost location); (2) slightly less suitable juvenile physical habitat conditions (7-14% less habitat during most seasons at all three locations); and (3) similar water temperature conditions for adults and juveniles in the Middle Yuba River.

- Similar conditions for Sacramento sucker in the upper Yuba River due to: (1) similar or more suitable physical habitat availability for adults upstream of Colgate; (2) less suitable habitat availability for juveniles upstream of Colgate; (3) less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer); and (4) similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions for Sacramento sucker would be similar in the YRDP reaches upstream of Englebright Dam. Although conditions would be less preferable in the lower portion of the North Yuba River, suitable conditions for Sacramento sucker would still persist in the remainder of the YRDP reaches (upper Yuba River, Middle Yuba River and Oregon Creek).

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento sucker in the remaining rivers (upper Yuba River, Middle Yuba River and Oregon Creek) would be similar. In addition, less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento sucker in this reach. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to Sacramento sucker in the YRDP reaches upstream of Englebright Dam relative to the Existing Condition and no mitigation is required.

Lower Yuba River

Flow and water temperature model results were examined for the lower Yuba River downstream of Englebright Dam at Smartsville, Parks Bar, DPD, and Marysville to evaluate potential impacts to target fish species and lifestages that could occur under the Proposed Projects (existing) relative to the Existing Condition. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.1.2 of Appendix 9C (pages 9C-13 through 9C-32). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for the lower Yuba River under the Proposed Projects (existing) scenario relative to the Existing Condition scenario are shown in Figures C1-1 through C1-115 and Tables C1-1 through C1-19 in Appendix 9E.

As described in Appendix 4B, the Proposed Projects would generally result in the following flow and water temperature conditions in the lower Yuba River relative to the Existing Condition scenario:

- Monthly average flows in the lower Yuba River are generally similar (e.g., +/- 5%) over the entire simulation period and during most months during all WYTs.
- Monthly average water temperatures in the lower Yuba River are similar (e.g., different by less than 0.5°F) during most months over the entire simulation period but are slightly warmer during May and June. Water temperatures by WYT also are typically similar during most months but are warmer during May and/or June of most WYTs (by about 0.5-1.0°F) and are cooler during August and September of Critical WYs (by about 0.4-1.7°F) in the lowermost reaches.

YRDP Impact FISH-PP-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River.

Relative to the Existing Condition scenario, the Proposed Projects (existing) scenario would be expected to result in:

- Essentially equivalent or very similar levels of flow-dependent physical habitat for the spring-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for spring-run Chinook salmon adult immigration and holding (April through September) due to generally similar probabilities of exceeding adult immigration and holding WTI values at Smartsville, DPD, and Marysville during spring, summer, and early fall, with a slightly increased (6%) probability of exceeding the adult holding UO WTI value during the summer months at Marysville (where the presence of immigrating adults is expected to be limited in duration).
- Similar conditions for spring-run Chinook salmon spawning (September through mid-October) and embryo incubation (September through December) due to similar probabilities of exceeding spawning and embryo incubation WTI values at Smartsville and Parks Bar.

- Over the entire evaluation period, the Proposed Projects (existing) relative to the Existing Condition provides similar lengths of ≤ 56°F and ≤ 58°F habitat over most of the September-October period does provide approximately 0.5 more miles of ≤ 56°F habitat for about 2 weeks during mid-October and provides about 0.5 fewer miles of ≤ 58°F habitat during the first week of September.
- During Dry and Critical WYs, the Proposed Projects (existing) relative to the Existing Condition provides similar lengths of ≤ 56°F and ≤ 58°F habitat over most of the September-October period but does provide approximately 0.5 more miles of ≤ 56°F habitat for about 2 weeks during mid-October and provides about 0.5 fewer miles of ≤ 58°F habitat during the first week of September.

- Similar conditions for spring-run Chinook salmon juvenile rearing (year-round but primarily mid-November through June), downstream movement (November through June), and smoltification (November through June) due to similar probabilities of exceeding the juvenile rearing, downstream movement, and salmon smoltification WTI values, but with a slightly increased (6%) probability of exceeding the juvenile downstream movement UO WTI value during the summer months at Marysville (where the presence of emigrating juveniles is expected to be limited in duration).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for spring-run Chinook salmon are expected to be similar under the Proposed Projects (existing) relative to the Existing Condition.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact spring-run Chinook salmon, their habitat, or migratory behaviors when compared to the Existing Condition. YRDP operations would result in similar conditions for spring-run Chinook salmon in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for all lifestages. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to spring-run Chinook salmon in the lower Yuba River relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-8: Operations-related impacts on fall-run Chinook salmon in the lower Yuba River.

Relative to the Existing Condition scenario, the Proposed Projects (existing) scenario would be expected to result in:

- Essentially equivalent levels of flow-dependent physical habitat for the fall-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for fall-run Chinook salmon adult immigration and staging (July through November) conditions due to similar probabilities of exceeding the adult immigration and staging WTI values at DPD and Marysville.
- Similar conditions for fall-run Chinook salmon spawning (October and November) and embryo incubation (October through March) due to similar probabilities of exceeding the spawning and embryo incubation WTI values at Smartsville and DPD.
- Similar conditions for fall-run Chinook salmon juvenile rearing and downstream movement (mid-December through June) due to similar probabilities of exceeding the juvenile rearing and downstream movement WTI values at Smartsville, DPD, and Marysville during winter and spring (when the vast majority of juvenile fall-run Chinook salmon would be expected to be rearing or moving downstream), but with slightly increased probabilities of exceeding the UO WTI value at DPD and Marysville during June (when a small proportion of juvenile fall-run Chinook salmon would be expected to remain in the lower Yuba River).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for fall-run Chinook salmon are expected to be similar under the Proposed Projects (existing) relative to the Existing Condition.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact fall-run Chinook salmon, their habitat, or migratory behaviors when compared to the Existing Condition. YRDP operations would result in similar conditions for fall-run Chinook salmon in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for all lifestages. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to fall-run Chinook salmon in the lower Yuba River relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-9: Operations-related impacts on steelhead in the lower Yuba River.

Relative to the Existing Condition scenario, the Proposed Projects (existing) scenario would be expected to result in:

- Essentially equivalent or very similar levels of flow-dependent physical habitat for the steelhead spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for steelhead adult immigration and holding (September through March) due to similar probabilities of exceeding the adult immigration and holding WTI values during fall, winter, and spring.

- Similar conditions for steelhead spawning and embryo incubation (January through April) and less suitable conditions for embryo incubation during May due to similar probabilities of exceeding the spawning and embryo incubation WTI values at Smartsville and Parks Bar during winter and spring, but with an increased (15%) probability of exceeding the UO WTI value at Smartsville and increased (9-11%) probabilities of exceeding the UT and UO WTI values at Parks Bar during May. Water temperatures under the Proposed Projects would remain below the UT WTI value during May at Smartsville 95% of the time.
- Similar conditions for steelhead juvenile rearing (year-round) and downstream movement (year-round but primarily February through July) due to similar probabilities of exceeding the juvenile rearing WTI values during all seasons at Smartsville and Parks Bar, and similar probabilities of exceeding the downstream movement WTI values during winter, spring, and summer at DPD and Marysville.
- Similar conditions for steelhead smoltification (November through April) due to generally similar probabilities of exceeding the steelhead smoltification WTI values during fall, winter, and spring at Smartsville and Parks Bar, but with a slightly increased (7%) probability of exceeding the UO WTI value at Smartsville during April, and with slightly decreased probabilities (8-9%) of exceeding the UO WTI value at both Smartsville and Parks Bar during November.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for steelhead are expected to be similar under the Proposed Projects relative to the Existing Condition for most lifestages, but less suitable for steelhead embryo incubation during May due to increased water temperatures. The increased water temperatures during the spring months (particularly during May) under the Proposed Projects relative to the Existing Condition are due to the modeling characterization of the use of the New Colgate Powerhouse upper intake (Colgate upper intake) during March through May. As prescribed by proposed Water Quality Certification (WQC) Condition 7 (which was incorporated into the Proposed Projects and alternatives, see Chapter 2 and Appendix 2E), the Colgate upper intake would be used during March through May in all years except when NBBR storage is below 648,800 acre-feet during the March through May period. Proposed WQC Condition 7 also includes flexibility such that "[i]*n consultation with CDFW and NMFS, Licensee may propose to delay the starting date and implement an earlier ending date for utilization of the upper intake for improving water temperature conditions in the lower Yuba River*" and "[i]*f supported by CDFW and NMFS, Licensee may adjust the period for use of the upper intake*" (Appendix 2E, p. 20). However, the modeling characterization of the use of the Colgate upper intake under the Proposed Projects (and alternatives) does not incorporate this flexibility in the timing of upper intake use that would be expected to occur to improve water temperature conditions. Consequently, implementation of proposed WQC 7 would incorporate resource agency consultation and coordination, which would be expected to minimize or avoid adverse impacts to steelhead spawning and incubation during May due to increased water temperatures resulting from use of the Colgate upper intake.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact steelhead, their habitat, or migratory behaviors when compared to the Existing Condition. YRDP operations would generally result in similar conditions for steelhead in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for most lifestages, but modeling results indicate that operations could potentially result in increased water temperatures during March through May due to the use of the Colgate upper intake, which could result in reduced thermal suitabilities for steelhead embryo incubation during May. While a reduction in thermal suitability could represent a potentially significant impact to steelhead, as described above, implementation of proposed WQC Condition 7 under the Proposed Projects would incorporate resource agency consultation and coordination regarding the timing of use of the Colgate upper intake to improve water temperatures, which would be expected to minimize or avoid potential adverse impacts to steelhead spawning and incubation during May due to increased water temperatures resulting from use of the Colgate upper intake. Therefore, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to steelhead in the lower Yuba River relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-10: Operations-related impacts on green sturgeon in the lower Yuba River.

Relative to the Existing Condition scenario, the Proposed Projects (existing) scenario would be expected to result in:

- Essentially equivalent or similar levels of flow-dependent physical habitat for green sturgeon adult holding and spawning due to generally similar flows over the extent of these lifestages (April through July) in most WYTs, although spawning habitat availability during June and July is lower on average (by about 16%) during Below Normal WYs. Average spawning WUA over the entire simulation period is similar.
- Slightly less suitable conditions for green sturgeon adult immigration and holding (April through June) due to slightly increased (6%) probabilities of exceeding the green sturgeon adult immigration and holding WTI value at both DPD and Marysville during June.
- Generally similar conditions for green sturgeon spawning and embryo incubation (June and July) due to generally similar probability of exceeding the green sturgeon spawning and embryo incubation WTI value at DPD (where green sturgeon spawning is expected to occur due to prior observations), but with a slightly increased (6%) probability of exceeding the WTI value at Marysville (where no prior observations of green sturgeon spawning have been documented).
- Similar conditions for green sturgeon adult post-spawn holding (June through mid-February) due to similar probabilities of exceeding the green sturgeon adult post-spawn holding WTI value during summer, fall, and winter at DPD and Marysville.

- Similar conditions for green sturgeon juvenile rearing and emigration (July through January) due to similar probabilities of exceeding the green sturgeon juvenile rearing and emigration WTI value during summer, fall, and winter at DPD and Marysville.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for green sturgeon are expected to be similar under the Proposed Projects (existing) relative to the Existing Condition.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact green sturgeon, their habitat, or migratory behaviors when compared to the Existing Condition. YRDP operations would result in similar conditions for green sturgeon in the lower Yuba River due to overall similar habitat availabilities and generally similar water temperature suitabilities for most lifestages, but slightly less suitable water temperature conditions for adult holding and immigration. However, these changes in thermal suitability are not expected to result in substantial adverse effects to green sturgeon habitat or migratory conditions. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to green sturgeon in the lower Yuba River relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-11: Operations-related impacts on lamprey in the lower Yuba River.

Relative to the Existing Condition scenario, the Proposed Projects (existing) scenario would be expected to result in:

- Essentially equivalent levels of flow-dependent physical habitat for the lamprey spawning and ammocoete rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Generally similar or slightly less suitable conditions for lamprey adult immigration (March through June) due to generally similar probabilities of exceeding the lamprey adult immigration WTI value during spring and summer, but with a slightly increased (6%) probability of exceeding the WTI value at Marysville during the spring, and with an increased (9%) probability of exceeding the WTI value at DPD during June (when a small proportion of lamprey adult immigration is expected to be occurring).
- Similar conditions for lamprey spawning (March through July) and incubation (March through August) due to similar probabilities of exceeding the lamprey spawning and incubation WTI value during spring and summer at Smartsville and DPD.
- Similar conditions for lamprey ammocoete rearing (year-round but primarily during December through February) due to similar probabilities of exceeding the lamprey ammocoete rearing WTI value during all seasons at DPD and Marysville.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for lamprey are expected to be similar under the Proposed Projects (existing) relative to the Existing Condition.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact lamprey, their habitat, or migratory behaviors when compared to the Existing Condition. YRDP operations would result in similar conditions for lamprey in the lower Yuba River due to similar habitat availabilities and water temperature suitabilities for all lifestages. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to lamprey in the lower Yuba River relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-12: Operations-related impacts on white sturgeon in the lower Yuba River.

There are very limited anecdotal observations of the presence of white sturgeon in the lower Yuba River. Nonetheless, because there is the potential for adult white sturgeon to occur in the lower Yuba River below DPD, review of monthly water temperature exceedance distributions at Marysville indicate infrequent (<2%) exceedance of the 77°F adult immigration and holding WTI value during the warmest months of the year (i.e., June through September) under both the Proposed Projects (existing) and Existing Condition scenarios.

CEQA Conclusion

YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact white sturgeon, their habitat, or migratory behaviors when compared to the Existing Condition. YRDP operations would result in similar conditions for white sturgeon in the lower Yuba River due to similar water temperature suitabilities for adults that may potentially occur downstream of DPD. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to white sturgeon, their habitat, and migratory conditions in the lower Yuba River relative to the Existing Condition and no mitigation is required.

YRDP Impact FISH-PP-13: Operations-related impacts on other fish species in the lower Yuba River.

Because of the limited changes to flows and thermal conditions described above, and because the thermal tolerances of hardhead, Central California roach, striped bass, and American shad are typically broader than those identified for anadromous salmonids, YRDP operations-related impacts to hardhead, Central California roach, striped bass, and American shad, their habitats, and migratory conditions are expected to be minimal to negligible when compared to the Existing Condition.

CEQA Conclusion

Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to these fish species and their habitat in the lower Yuba River relative to the Existing Condition and no mitigation is required.

9.5.1.2.2 Simulated Habitat Conditions under Proposed Projects (future) compared to the Future Baseline

YRDP Reaches Upstream of Englebright Dam

Flow and water temperature model results were examined for the YRDP reaches upstream of Englebright Dam to evaluate potential impacts to target fish species and lifestages that could occur under the Proposed Projects (future) scenario relative to the Future Baseline scenario. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.2.1 of Appendix 9C (pages 9C-32 through 9C-34). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for YRDP reaches upstream of Englebright Dam under the Proposed Projects (future) scenario relative to the Future Baseline scenario are shown in Figures C2-1 through C2-209 and Tables C2-1 through C2-177 in Appendix 9D.

Generally, simulated changes in flows in the North Yuba River, Oregon Creek and upper Yuba River downstream of Colgate under the Proposed Projects vs Future Baseline are essentially equivalent or very similar to the changes in flows described above for the Proposed Projects vs Existing Condition (see Appendix 4B). Differences in flows in the Middle Yuba River (reaches below OHDD) and upper Yuba River upstream of Colgate under the Proposed Projects vs Future Baseline comparison relative to the Proposed Projects vs Existing Condition comparison exhibit the same directional trends but with further increases in flows under the future comparison during June through November (i.e., increases of about 10-70 cfs or 40 to 200% higher in the Middle Yuba River, and increases of about 40-90 cfs or 40-150% higher in the upper Yuba River above Colgate). Differences in water temperatures in all upstream YRDP reaches under the Proposed Projects vs Future Baseline comparison are generally equivalent or similar to those described for the Proposed Projects vs Existing Condition comparison.

YRDP Impact FISH-FPP-3: Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, rainbow trout were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Future Baseline.

- More suitable conditions for rainbow trout in the North Yuba River due to more suitable habitat conditions, including higher or substantially higher amounts of adult (19-44% higher during summer and fall) and juvenile (12-24% higher during winter, summer and fall) rainbow trout habitat during most seasons, and higher (7-10% higher) rainbow trout spawning habitat in all WYTs, and more suitable thermal suitabilities for adults and juveniles during summer, and for spawning.
- More suitable conditions for rainbow trout in Oregon Creek due to similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability

for spawning (4-19% more), and improved thermal suitability for adults and juveniles during summer (about 30% reduction in exceedance of 68°F) below OHDD.

- Slightly more suitable conditions for rainbow trout in the Middle Yuba River due to similar or less suitable habitat availability conditions for juveniles (1-10% less habitat), improved habitat availability conditions for adults in the upper reaches (7-23% more habitat) and for spawning in the lowermost reach (17% more habitat), and similar or slightly improved thermal suitability conditions.
- Overall more suitable conditions for rainbow trout in the upper Yuba River due to more suitable habitat availability conditions for adults (13-22% more habitat during summer and fall), less suitable habitat availability for juveniles (7-12% less habitat) upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate (75% lower exceedance of 68°F), and similar habitat availability and thermal suitability conditions for all lifestages downstream of Colgate. Improved water temperature conditions for rainbow trout in the upper Yuba River was a primary management objective of the Relicensing Participants' (including USFWS, USFS, CDFW, BLM) *Minimum Streamflows for the North Yuba River* condition, which balanced instream habitat and water temperature conditions in the North Yuba River reach and upper Yuba River downstream of the confluence of the North Yuba River and Middle Yuba River (USDOI 2017; USFS 2018).

Overall, rainbow trout habitat conditions would be more suitable in the YRDP reaches due to increased habitat availability and more suitable water temperature conditions, particularly for the adult and spawning lifestages.

CEQA Conclusion

YRDP operations-related activities in the North Yuba River downstream of NBBD, Oregon Creek downstream of LCDD, Middle Yuba River downstream of OHDD, and upper Yuba River would not substantially disturb or otherwise adversely impact rainbow trout, their habitat, or migratory behaviors under the Proposed Projects when compared to the Future Baseline. Operations-related activities under the Proposed Projects would result in **less-than-significant and potentially beneficial** impacts to rainbow trout in the YRDP reaches upstream of Englebright Dam relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-4: Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, hardhead were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Future Baseline.

- Overall, less suitable habitat conditions for hardhead in a portion of the NBBD Reach of the North Yuba River, where hardhead have not been documented. Although habitat availability would be improved (including about 11-24% more adult habitat and 7-12%

more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall. Specifically, water temperatures within the preferred range (61-77°F) would occur about 95% less often during summer and about 20% less often during fall in the North Yuba River above the confluence with the Middle Yuba River. This reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) and adopted by FERC and USACE (2019) targeting the provision of suitable rainbow trout physical habitat and water temperatures in the North Yuba River downstream of NBBD, and providing thermal benefits for rainbow trout in the upper Yuba River downstream of the North Yuba River. The substantial reduction in water temperature in the North Yuba River due to the proposed flow regime was acknowledged and understood by the Relicensing Participants (USDOI 2017; USFS 2018). As stated by USDOI (2017, p. 12) *"…the Resource Agencies balanced the benefit of higher releases for more instream habitat with the need to keep appropriate temperatures in the North Yuba River below New Bullards Bar Dam and the reach of the Yuba River below the confluence of the North and Middle Yuba Rivers. The Resource Agencies struck a compromise between making temperatures too cold in the North Yuba River while still providing enough cold water through the reach to provide a benefit to the reach of the* [upper] *Yuba River downstream. Any additional water released in the North Yuba River below New Bullards Bar Dam would make temperatures too cold for sufficient adult and juvenile trout growth, any less water would not provide a sufficient benefit to the confluence reach."*

Because hardhead were not observed in the North Yuba River downstream of NBBD during YRDP Relicensing studies, and because suitable water temperatures for hardhead spawning primarily occur downstream of the North Yuba River under existing conditions, it is uncertain whether less suitable thermal habitat conditions for adults and juveniles during summer and early fall would directly impact hardhead in this reach.

- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable habitat availability for adults during summer (about 12% more habitat) and improved thermal suitability for spawning (water temperatures occurring within the 59-64°F range 15% more often) upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate (although water temperatures outside of the hardhead preference range would persist under the Proposed Projects and the Future Baseline for adults and juveniles during spring through fall).

Overall, habitat conditions would be less suitable for hardhead in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with slightly more suitable habitat conditions in the 7.5-mile long upper Yuba River due to improved conditions for adult habitat availability and spawning thermal suitability upstream of Colgate (5.8-mile reach) and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). As described above, based on hardhead life history (including upstream spawning migrations, downstream movement of adults and juveniles subsequent to spawning, and the preference for warm water temperatures) and the generally non-preferred thermal conditions for hardhead spawning in the North Yuba River under existing conditions, hardhead spawning and subsequent rearing is most likely to occur in the upper Yuba River. As described above, hardhead

juveniles and adults are present in Englebright Reservoir. Because Englebright Reservoir conditions (e.g., water surface elevations) would not substantially change under the Proposed Projects relative to the Future Baseline, Englebright Reservoir would continue to serve as a refuge for hardhead.

In addition to the slightly more suitable habitat conditions for hardhead in the upper Yuba River, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass (which reportedly prefer summer water temperatures of about 20-27°C (68-81°F) (Moyle 2002). For example, smallmouth bass was found to be one of the most abundant fish species in the upper Yuba River, comprising about 77% of fishes observed in surveys during 2013 near RM 39.6 (immediately downstream of the North Yuba River/Middle Yuba River confluence) and comprising 93-98% of the fish observed during both 2012 and 2013 at RM 35 (upstream of Colgate) (Yuba Water 2017). However, in contrast to the reach upstream of Colgate, smallmouth bass were not observed downstream of Colgate (where water temperatures are much colder) during the snorkel surveys, and only 1 smallmouth bass was captured incidentally during electrofishing surveys (Yuba Water 2017). The introduction of black bass has been identified as one of the key factors in hardhead population declines in the Central Valley (Moyle 2002; Brown and Moyle 1993), including in the South Yuba River (Moyle et al. 1995). Gard (2004, as cited in Cocherell et al. 2014) found that smallmouth bass limited the abundance of hardhead prey (native cyprinids) in the South Yuba River. Because water temperatures during the summer in the upper Yuba River below the North Yuba River/Middle Yuba River confluence would occur within the 68-81°F smallmouth bass preference range about only 10% of the time relative to about 80% of the time under the Future Baseline, the upper Yuba River may become less preferred by smallmouth bass, which could indirectly benefit hardhead utilization and survival in this reach.

CEQA Conclusion

YRDP operations-related activities would not substantially disturb or otherwise adversely impact hardhead, their habitat, or migratory behaviors when compared to the Future Baseline. Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for hardhead in the longer 7.5-mile long upper Yuba River would be slightly more suitable. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit hardhead utilization and survival in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for hardhead colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for hardhead when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to hardhead in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-5: Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento pikeminnow was evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products

in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Future Baseline.

- Overall, less suitable conditions for Sacramento pikeminnow in a portion of the NBBD Reach of the North Yuba River. Although habitat availability would be improved (including about 11-24% more adult habitat and 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.
- Similar conditions for pikeminnow in the upper Yuba River due to more suitable physical habitat availability conditions for adults upstream of Colgate during summer (about 12% more habitat), less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer), and similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions would be less suitable for Sacramento pikeminnow in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with similar habitat conditions in the 7.5-mile long upper Yuba River due to generally similar conditions for adults and juveniles but improved adult physical habitat availability upstream of Colgate (5.8-mile reach), and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). Although conditions would be less preferable in the lower portion of the North Yuba River, suitable conditions for Sacramento pikeminnow would still persist in the larger upper Yuba River. As described above for hardhead, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass, which could indirectly benefit Sacramento pikeminnow in this reach.

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento pikeminnow in the longer 7.5-mile long upper Yuba River would be similar. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento pikeminnow in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for Sacramento pikeminnow colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for Sacramento pikeminnow when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related

activities under the Proposed Projects would result in **less-than-significant** impacts to Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento sucker was evaluated in the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD, and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under the Proposed Projects relative to the Future Baseline.

- Overall, less suitable conditions for Sacramento sucker in a portion of the NBBD Reach of the North Yuba River. Although physical habitat availability would be improved for juveniles (10-12% more habitat during summer and fall) and adults (10-20% more habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.
- Similar conditions for Sacramento sucker in Oregon Creek due to overall similar habitat availability and water temperature conditions across the three locations evaluated.
- Similar conditions for Sacramento sucker in the Middle Yuba River due to: (1) slightly more suitable adult habitat conditions (5-11% more habitat at the uppermost location); (2) slightly less suitable juvenile habitat conditions (7-14% less habitat during most seasons at all three locations); and (3) similar water temperature conditions for adults and juveniles in the Middle Yuba River.
- Similar conditions for Sacramento sucker in the upper Yuba River due to: (1) similar or more suitable physical habitat availability for adults upstream of Colgate; (2) less suitable habitat availability for juveniles upstream of Colgate; (3) less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer); and (4) similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions for Sacramento sucker would be similar in the YRDP reaches upstream of Englebright Dam. Although conditions would be less preferable in the lower portion of the

North Yuba River, suitable conditions for Sacramento sucker would still persist in the remainder of the YRDP reaches (upper Yuba River, Middle Yuba River and Oregon Creek).

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento sucker in the remaining rivers (upper Yuba River, Middle Yuba River and Oregon Creek) would be similar. In addition, less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento sucker in this reach. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to Sacramento sucker in the YRDP reaches upstream of Englebright Dam relative to the Future Baseline and no mitigation is required.

Lower Yuba River

Flow and water temperature model results were examined for the lower Yuba River downstream of Englebright Dam at Smartsville, Parks Bar, DPD, and Marysville to evaluate potential impacts to target fish species and lifestages that could occur under the Proposed Projects (future) scenario relative to the Future Baseline scenario. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.2.2 of Appendix 9C (pages 9C-34 through 9C-52). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for the lower Yuba River under the Proposed Projects (future) scenario relative to the Future Baseline scenario are shown in Figures C2-1 through C2-115 and Tables C2-1 through C2-19 in Appendix 9E.

As described in Appendix 4B, the Proposed Projects would generally result in the following flow and water temperature conditions in the lower Yuba River relative to the Future Baseline:

- Monthly average flows in the lower Yuba River are generally similar (e.g., +/- 5%) over the entire simulation period and during most months during all WYTs.
- Monthly average water temperatures in the lower Yuba River are similar (e.g., different by less than 0.5°F) during most months over the entire simulation period but are slightly warmer during May and June. Water temperatures by WYT also are typically similar during most months but are warmer during May and/or June of most WYTs and are cooler during August and September of Critical WYs in the lowermost reaches.

YRDP Impact FISH-FPP-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River.

Relative to the Future Baseline scenario, the Proposed Projects (future) scenario would be expected to result in:

- Essentially equivalent or very similar levels of flow-dependent physical habitat for the spring-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages due

to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.

- Similar conditions for spring-run Chinook salmon adult immigration and holding (April through September) due to generally similar probabilities of exceeding adult immigration and holding WTI values at Smartsville, DPD, and Marysville during spring, summer, and early fall.
- Similar conditions for spring-run Chinook salmon spawning (September through mid-October) and embryo incubation (September through December) due to similar probabilities of exceeding spawning and embryo incubation WTI values at Smartsville and Parks Bar.
    - Over the entire evaluation period, the Proposed Projects (future) relative to the Future Baseline provides similar lengths of ≤ 56°F and ≤ 58°F habitat over most of the September-October period, but does provide approximately 0.5 more miles of ≤ 56°F habitat during the second week of September and for about 1 week during mid-October and provides about 0.5-1.0 fewer miles of ≤ 58°F habitat during the last week of September into early October.
    - During Dry and Critical WYs, the Proposed Projects (future) relative to the Future Baseline provides similar lengths of ≤ 56°F and ≤ 58°F habitat over most of the September-October period, but does provide approximately 0.5 more miles of ≤ 56°F habitat for about 1 week during mid-October and provides about 0.5 fewer miles of ≤ 58°F habitat during the first week of September.
- Similar conditions for spring-run Chinook salmon juvenile rearing (year-round but primarily mid-November through June), downstream movement (November through June), and smoltification (November through June) due to similar probabilities of exceeding the juvenile rearing, downstream movement, and salmon smoltification WTI values, but with an increased probability (9%) of exceeding the juvenile downstream movement UO WTI value at DPD during the summer months (when a small proportion of juvenile spring-run Chinook salmon would be expected to remain in the lower Yuba River).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for spring-run Chinook salmon are expected to be similar under the Proposed Projects (future) relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact spring-run Chinook salmon, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would result in similar conditions for spring-run Chinook salmon in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for all lifestages. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to spring-run Chinook salmon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-8: Operations-related impacts on fall-run Chinook salmon in the lower Yuba River.

Relative to the Future Baseline scenario, the Proposed Projects (future) scenario would be expected to result in:

- Essentially equivalent levels of flow-dependent physical habitat for the fall-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for fall-run Chinook salmon adult immigration and staging (July through November) conditions due to similar probabilities of exceeding the adult immigration and staging WTI values at DPD and Marysville.
- Similar conditions for fall-run Chinook salmon spawning (October and November) and embryo incubation (October through March) due to similar probabilities of exceeding the spawning and embryo incubation WTI values at Smartsville and DPD.
- Similar conditions for fall-run Chinook salmon juvenile rearing and downstream movement (mid-December through June) due to similar probabilities of exceeding the juvenile rearing and downstream movement WTI values at Smartsville, DPD, and Marysville during winter and spring (when the vast majority of juvenile fall-run Chinook salmon would be expected to be rearing or moving downstream), but with an increased probability (9%) of exceeding the juvenile rearing and downstream movement UO WTI value at DPD during June (when a small proportion of juvenile fall-run Chinook salmon would be expected to remain in the lower Yuba River).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for fall-run Chinook salmon are expected to be similar under the Proposed Projects (future) relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact fall-run Chinook salmon, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would result in similar conditions for fall-run Chinook salmon in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for all lifestages. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to fall-run Chinook salmon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-9: Operations-related impacts on steelhead in the lower Yuba River.

Relative to the Future Baseline scenario, the Proposed Projects (future) scenario would be expected to result in:

- Essentially equivalent or very similar levels of flow-dependent physical habitat for the steelhead spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for steelhead adult immigration and holding (September through March) due to similar probabilities of exceeding the adult immigration and holding WTI values during fall, winter, and spring.
- Similar conditions for steelhead spawning and embryo incubation (January through April) and less suitable conditions for embryo incubation during May due to similar probabilities of exceeding the spawning and embryo incubation WTI values at Smartsville and Parks Bar during winter and spring, but with an increased (16%) probability of exceeding the UO WTI value at Smartsville and increased (8-10%) probabilities of exceeding the UT and UO WTI values at Parks Bar during May. Water temperatures under the Proposed Projects would remain below the UT WTI value during May at Smartsville 95% of the time.
- Similar conditions for steelhead juvenile rearing (year-round) and downstream movement (year-round but primarily February through July) due to similar probabilities of exceeding the juvenile rearing WTI values during all seasons at Smartsville and Parks Bar, and similar probabilities of exceeding the downstream movement WTI values during winter, spring, and summer at DPD and Marysville.
- Similar conditions for steelhead smoltification (November through April) due to generally similar probabilities of exceeding the steelhead smoltification WTI values during fall, winter, and spring at Smartsville and Parks Bar, but with a slightly increased (7%) probability of exceeding the UO WTI value at Smartsville during the spring (April), and with slightly decreased (8-9%) probabilities of exceeding the UO WTI value at both Smartsville and Parks Bar during the fall (November).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for steelhead are expected to be similar under the Proposed Projects relative to the Future Baseline for most lifestages, but less suitable for steelhead embryo incubation during May due to increased water temperatures. The increased water temperatures during the spring months (particularly during May) under the Proposed Projects relative to the Future Baseline are due to the modeling characterization of the use of the New Colgate Powerhouse upper intake (Colgate upper intake) during March through May. As prescribed by proposed Water Quality Certification (WQC) Condition 7 (which was incorporated into the Proposed Projects and alternatives, see Chapter 2 and Appendix 2E), the Colgate upper intake would be used during March through May in all years except when NBBR storage is below 648,800 acre-feet during the March through May period. Proposed WQC Condition 7 also includes flexibility such that "[i]*n consultation with CDFW and NMFS, Licensee may propose to delay the starting date and implement an earlier ending date for utilization of the upper intake for improving water temperature conditions in the lower Yuba River*" and "[i]*f supported by CDFW and NMFS, Licensee may adjust the period for use of the upper intake*" (Appendix 2E, p. 20). However, the modeling characterization of the use of the Colgate upper intake under the Proposed Projects (and alternatives) does not incorporate this flexibility in the timing of upper intake use that would be expected to occur to improve water temperature conditions. Consequently, implementation of proposed WQC 7 would incorporate resource agency

consultation and coordination, which would be expected to minimize or avoid adverse impacts to steelhead spawning and incubation during May due to increased water temperatures resulting from use of the Colgate upper intake.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact steelhead, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would generally result in similar conditions for steelhead in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for most lifestages, but modeling results indicate that operations could potentially result in increased water temperatures during March through May due to the use of the Colgate upper intake, which could result in reduced thermal suitabilities for steelhead embryo incubation during May. While a reduction in thermal suitability could represent a potentially significant impact to steelhead, as described above, implementation of proposed WQC Condition 7 under the Proposed Projects would incorporate resource agency consultation and coordination regarding the timing of use of the Colgate upper intake to improve water temperatures, which would be expected to minimize or avoid potential adverse impacts to steelhead spawning and incubation during May due to increased water temperatures resulting from use of the Colgate upper intake. Therefore, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to steelhead in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-10: Operations-related impacts on green sturgeon in the lower Yuba River.

Relative to the Future Baseline scenario, the Proposed Projects (future) scenario would be expected to result in:

- Essentially equivalent or similar levels of flow-dependent physical habitat for green sturgeon adult holding and spawning due to generally similar flows over the extent of these lifestages (April through July) and in most WYTs, but with slightly lower amounts of spawning habitat on average during Below Normal WYs.
- Slightly less suitable conditions for green sturgeon adult immigration and holding (April through June) due to an increased (9%) probability of exceeding the green sturgeon adult immigration and holding WTI value at DPD during June, but similar probabilities of exceedance at DPD during April and May.
- Generally similar conditions for green sturgeon spawning and embryo incubation (June and July) due to generally similar probability of exceeding the green sturgeon spawning and embryo incubation WTI value.
- Similar conditions for green sturgeon adult post-spawn holding (June through mid-February) due to similar probabilities of exceeding the green sturgeon adult post-spawn holding WTI value during summer, fall, and winter at DPD and Marysville.

- Similar conditions for green sturgeon juvenile rearing and emigration (July through January) due to similar probabilities of exceeding the green sturgeon juvenile rearing and emigration WTI value during summer, fall, and winter at DPD and Marysville.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for green sturgeon are expected to be similar under the Proposed Projects (future) relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact green sturgeon, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would result in similar conditions for green sturgeon in the lower Yuba River due to overall similar habitat availabilities and generally similar water temperature suitabilities for most lifestages, but slightly less suitable water temperature conditions for adult holding and immigration. However, these changes in thermal suitability are not expected to result in substantial adverse effects to green sturgeon habitat or migratory conditions. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to green sturgeon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-11: Operations-related impacts on lamprey in the lower Yuba River.

Relative to the Future Baseline scenario, the Proposed Projects (future) scenario would be expected to result in:

- Essentially equivalent levels of flow-dependent physical habitat for the lamprey spawning and ammocoete rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Generally similar conditions for lamprey adult immigration (March through June) due to generally similar probabilities of exceeding the lamprey adult immigration WTI value during spring and summer, but with a slightly increased (6%) probability of exceeding the WTI value at DPD during June (when a small proportion of lamprey adult immigration is expected to be occurring).
- Similar conditions for lamprey spawning (March through July) and incubation (March through August) due to similar probabilities of exceeding the lamprey spawning and incubation WTI value during spring and summer at Smartsville and DPD.
- Similar conditions for lamprey ammocoete rearing (year-round but primarily during December through February) due to similar probabilities of exceeding the lamprey ammocoete rearing WTI value during all seasons at DPD and Marysville.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for lamprey are expected to be similar under the Proposed Projects (future) relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact lamprey, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would result in similar conditions for lamprey in the lower Yuba River due to similar habitat availabilities and water temperature suitabilities for all lifestages. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to lamprey in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-12: Operations-related impacts on white sturgeon in the lower Yuba River.

There are very limited anecdotal observations of the presence of white sturgeon in the lower Yuba River, Nonetheless, because there is the potential for adult white sturgeon to occur in the lower Yuba River below DPD, review of monthly water temperature exceedance distributions at Marysville indicate infrequent (<2%) exceedance of the 77°F adult immigration and holding WTI value during the warmest months of the year (i.e., June through September) under both the Proposed Projects (future) and Future Baseline scenarios.

CEQA Conclusion

YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact white sturgeon, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would result in similar conditions for white sturgeon in the lower Yuba River due to similar water temperature suitabilities for adults that may potentially occur downstream of DPD. Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to white sturgeon, their habitat, and migratory conditions in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FPP-13: Operations-related impacts on other fish species in the lower Yuba River.

Because of the limited changes to flows and thermal conditions described above, and because the thermal tolerances of hardhead, Central California roach, striped bass, and American shad are typically broader than those identified for anadromous salmonids (i.e., Chinook salmon and steelhead), YRDP operations-related impacts to hardhead, Central California roach, striped bass, and American shad, their habitats, and migratory conditions are expected to be minimal to negligible when compared to the Future Baseline.

CEQA Conclusion

Consequently, YRDP operations under the Proposed Projects would result in **less-than-significant** impacts to these fish species and their habitat in the lower Yuba River relative to the Future Baseline and no mitigation is required.

9.5.1.2.3 Additional Operations-Related Impacts

YRDP Areas Upstream of Englebright Reservoir

Reservoirs

YRDP Impacts FISH-PP-14 and FISH-FPP-14: Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir.

Based on the monthly frequency of 6-foot or greater reductions in modeled NBBR water surface elevations during March through June over the period of simulation, the Proposed Projects (existing) would result in the same frequency of 6-foot or greater reductions relative to the Existing Condition. Consequently, relative to the Existing Condition scenario, the Proposed Projects (existing) would provide similarly suitable conditions for warmwater fish in NBBR.

Based on the monthly frequency of 6-foot or greater reductions in modeled NBBR water surface elevations during March through June over the period of simulation, the Proposed Projects (future) would result in a similar but slightly higher (6%) month-to-month frequency of 6-foot or greater reductions relative to the Future Baseline. Consequently, relative to the Future Baseline, the Proposed Projects (future) would be expected to provide similarly suitable conditions for warmwater fish in NBBR.

CEQA Conclusion

As described above, YRDP operations-related activities in NBBR would not substantially disturb or otherwise adversely impact warmwater fisheries or their habitat in NBBR when compared to the Existing Condition or Future Baseline. Habitat conditions for warmwater fisheries in NBBR would be similar due to similar NBBR water surface elevations during March through June. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to warmwater fisheries in NBBR relative to both the Existing Condition and Future Baseline and no mitigation is required.

YRDP Impacts FISH-PP-15 and FISH-FPP-15: Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir.

Based on modeled NBBR storage volumes summarized in Table C1-Reservoir-1 in Appendix 4C, the Proposed Projects (existing) would not be expected to result in an increased frequency of reductions in average monthly storage of sufficient magnitude or duration to result in reductions to coldwater pool volume during the months of April through November over the entire period of simulation and in each WYT, relative to the Existing Condition. Consequently, relative to the Existing Condition, the Proposed Projects (existing) would be expected to provide similarly suitable conditions for coldwater fish in NBBR.

Based on modeled NBBR storage volumes summarized in Table C2-Reservoir-1 in Appendix 4C, the Proposed Projects (future) also would not be expected to result in an increased frequency of reductions in average monthly storage of sufficient magnitude or duration to result in reductions to coldwater pool volume during the months of April through November over the entire period of simulation and in each WYT, relative to the Future Baseline. Consequently, relative to the Future

Baseline, the Proposed Projects (future) would be expected to provide similarly suitable conditions for coldwater fish in NBBR.

CEQA Conclusion

As described above, YRDP operations-related activities in NBBR would not substantially disturb or otherwise adversely impact coldwater fisheries or their habitat in NBBR when compared to the Existing Condition or Future Baseline. Habitat conditions for coldwater fisheries in NBBR would be similar due to similar NBBR storages during April through November. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to coldwater fisheries in NBBR relative to both the Existing Condition and Future Baseline and no mitigation is required.

YRDP Impacts FISH-PP-16 and FISH-FPP-16: Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries.

As described above for warmwater fish in NBBR, neither the Proposed Projects (existing) nor the Proposed Projects (future) would be expected to result in substantial reductions in NBBR water surface elevations during the March through June timeframe relative to the Existing Condition and Future Baseline, respectively. Consequently, relative to baseline conditions, the Proposed Projects would be expected to provide similarly suitable conditions for fish access to NBBR tributaries.

CEQA Conclusion

YRDP operations-related activities in NBBR would not substantially affect migratory conditions of fish species accessing tributaries to NBBR when compared to the Existing Condition or Future Baseline. The ability of reservoir fish to access tributaries to NBBR would be similar due to similar NBBR water surface elevations during March through June. Consequently, operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to fish access to NBBR tributaries relative to both the Existing Condition and Future Baseline and no mitigation is required.

YRDP Impacts FISH-PP-17 and FISH-FPP-17: Other operations-related impacts on YRDP reservoir fisheries in areas upstream of Englebright Dam.

Entrainment

New Colgate Power Tunnel

Under existing YRDP operations, only the lower New Colgate Power Tunnel intake is used per direction from CDFW. Yuba Water evaluated the potential for fish entrainment into the New Colgate Power Tunnel under existing YRDP operations during YRDP relicensing studies and found that the potential for entrainment of reservoir fishes was low (Yuba Water 2017). Gill net sampling conducted in NBBR near NBBD during January and June 2012 found only two individuals (a kokanee and a spotted bass) in deep water (~30m) samples, which represented approximately 11% of all individuals captured across all sampling sites (Yuba Water 2017). FERC and USACE (2019, pp. 3-199 – 3-201) evaluated the potential for entrainment into the New Colgate Intake Tunnel and concluded that, considering the low number of fish occurring in deep

water, the potential for effects to fish in NBBR due to entrainment into the New Colgate Power Tunnel would be minimal. Under the Proposed Projects, Yuba Water would implement use of the upper New Colgate Power Tunnel intake during March through May. The upper intake is approximately 55 m (180 ft) higher in elevation than the lower intake. Neither the Proposed Projects (existing) nor Proposed Projects (future) would result in substantial changes in NBBR water surface elevations relative to the bases of comparison (see Table C1-Reservoir-2 in Appendix 4C and Table C2-Reservoir-2 in Appendix 4C, respectively). Under the Proposed Projects, NBBR average monthly water surface elevations during March through May in Critical WYs (when the lowest NBBR water surface elevations would occur) would range from a minimum of 1,860-1,873 ft, which would result in the minimum average monthly March through May depth of the upper intake ranging from approximately 52-65 ft below water surface. Yuba Water's 2012 relicensing study gillnet sampling near NBBD resulted in only one fish (a spotted bass) being captured in mid-water gillnet samples, and no fish being caught in shallow open-water gillnet samples (Yuba Water 2017). These results indicate that the use of the upper New Colgate Power Tunnel intake during March through May under the Proposed Projects would not result in increased levels of fish entrainment into the New Colgate Power Tunnel relative to the bases of comparison.

Narrows 2 Power Tunnel Intake and Narrows Tunnel via USACE's Englebright Intake

The invert elevations of Yuba Water's YRDP Narrows 2 Power Tunnel Intake and the USACE's Englebright Intake (which supplies water to the Narrows Tunnel) are 439 and 460 ft, respectively. As part of its YRDP relicensing, Yuba Water deployed gill nets in Englebright Reservoir, with some nets near and at water depths similar to the depths of the intakes (Yuba Water 2017). The gill nets near the intakes captured only three adult fish – two rainbow trout and one brown trout – with the majority of fish captured by gillnets occurring in shallow and near-shore samples in Englebright Reservoir. In addition, the study found that juvenile and adult trout have swim and burst speeds that would allow them to easily avoid impingement on the intakes and escape intake velocities. The study also found that if any fish were entrained, the chance of survival was high since the Narrows 2 Powerhouse contains a Francis turbine[18], as does the Narrows 1 Powerhouse. For these reasons, FERC and USACE (2019) concluded that the effect of operating the Narrows 2 Powerhouse on reservoir fishes was minimal under existing operations. The results of Yuba Water's 2011 YRDP entrainment study are directly applicable to the USACE Englebright Intake. Additionally, neither the Proposed Projects (existing) nor Proposed Projects (future) would result in substantial changes in Englebright Reservoir water surface elevations relative to the bases of comparison (see Table C1-Reservoir-4 in Appendix 4C and Table C2-Reservoir-4 in Appendix 4C, respectively). Because YRDP and Narrows Project operations under the Proposed Projects would not result in substantial changes in Englebright Reservoir water surface elevations relative to the bases of comparison, these scenarios would not be expected to result in an increase in fish entrainment into the Narrows 2 Power Tunnel and Narrows Tunnel relative to the bases of comparison.

[18] The Narrows 2 Powerhouse has a Francis turbine, which due to its design, has a higher survival rate (Cada 2001).

CEQA Conclusion

As described above, other operations-related activities at NBBR and Englebright Reservoir would not substantially disturb or otherwise adversely impact reservoir fisheries when compared to the Existing Condition or Future Baseline. Other YRDP operations-related effects to reservoir fisheries upstream of Englebright Dam under the Proposed Projects relative to both the Existing Condition and the Future Baseline would be minimal due to: (1) similar levels of NBBR fish entrainment into the New Colgate Power Tunnel based on similar NBBR WSEs; and (2) similar levels of Englebright Reservoir fish entrainment into the Narrows 2 Power Tunnel and Narrows Tunnel due to similar Englebright Reservoir WSEs. Consequently, other YRDP operations-related activities would result in **less-than-significant** impacts to reservoir fisheries resources in areas upstream of Englebright Dam relative to both the Existing Condition and Future Baseline and no mitigation is required.

YRDP Impacts FISH-PP-18 and FISH-FPP-18: Other operations-related impacts on fisheries resources in reaches upstream of Englebright Dam.

Effects Related to Diversion Dams

Currently, there are no fish passage facilities at Log Cabin or Our House diversion dams, but fish may move downstream of the dams when spill occurs (Yuba Water 2017). Stream fish population studies conducted for YRDP relicensing found fish species composition in the reaches above and below the diversion dams are relatively similar (Yuba Water 2017), which indicates that fish in these reaches are not being adversely affected by a lack of volitional passage. The Proposed Projects would not result in any changes to fish passage conditions at the diversion dams relative to existing conditions.

Fish entrainment was assessed through Yuba Water's efforts at monitoring entrainment at the OHDD and LCDD during relicensing studies, and entrainment of rainbow trout at these facilities was found to occur at very low rates under existing operations (Yuba Water 2017). Moreover, neither of these diversion tunnels lead to power generation facilities with turbines, so mortality of fish that do get entrained is not likely to occur. Under the Proposed Projects, YRDP Condition AR11 would require Yuba Water to periodically close the Lohman Ridge Diversion Tunnel and use the low-level outlet and fish release valves at LCDD during spring and fall depending on WYT and NBBR water surface elevation. Implementing AR11 would further minimize the already low rates of entrainment of fish from the Middle Yuba River into the Lohman Ridge and Camptonville tunnels, and which would benefit fish populations in the Middle Yuba River and Oregon Creek under the Proposed Projects relative to existing conditions.

Fish stranding and/or rainbow trout redd dewatering in the reaches downstream of the diversion dams has the potential to occur if YRDP operations were to cause rapid and substantial decreases in flows in these areas. However, no information is available to suggest that fish stranding or rainbow trout redd dewatering occurs in the reaches downstream of the diversion dams under existing operations. Additionally, under the Proposed Projects, YRDP Conditions AR2 and AR12 would implement gradual spill cessation requirements for spills over OHDD and LCDD, respectively. Although flows are often higher and exhibit more natural variability under the Proposed Projects these conditions would result in more gradual down-ramping after spill events

between April and July during some years relative to existing conditions (Yuba Water 2017), particularly during Wet WYs in Oregon Creek and during most Wet and Above Normal WYs in the Middle Yuba River. The more gradual reductions in flow after spill events would reduce the potential for fish stranding under the Proposed Projects downstream of the diversion dams in the Middle Yuba River and Oregon Creek relative to existing conditions. Consequently, the potential for rainbow trout redd dewatering and fish stranding downstream of the diversion dams under the Proposed Projects would be similar or reduced relative to the bases of comparison.

Effects to physical fish habitat related to sediment and woody material management could occur in the reaches downstream of the diversion dams if YRDP operations were to prohibit the passage of sediment or woody material (which can contribute to maintaining healthy and productive aquatic ecosystems). However, under the existing FERC license for the YRDP, Yuba Water implements the Log Cabin and Our House Diversion Dams Sediment Management Plan to manage sediment accumulated upstream of the diversion dams and allow its passage downstream through the dams' low-level outlets when appropriate flow conditions occur. Additionally, woody material passes over the diversion dams when spill over the dams occurs under existing conditions. Moreover, under the Proposed Projects, YRDP Condition GS2 would require Yuba Water to continue implementing the *Log Cabin and Our House Diversion Dams Sediment Management Plan*, and YRDP Condition GS3 would require Yuba Water to implement the *Our House and Log Cabin Diversion Dams [and New Bullards Bar Reservoir] Woody Material Management Plan* to, in part, allow for more passage of woody material over the diversion dams. Implementation of these conditions under the Proposed Projects would help to maintain or improve the existing aquatic habitat complexity and associated physical fisheries habitat conditions in these reaches of the Middle Yuba River and Oregon Creek relative to existing conditions.

Effects Related to License Conditions/Implementation Plans

AR5 – Implement Aquatic Invasive Species Management Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition AR5 would implement an Aquatic Invasive Species (AIS) Management Plan to minimize the risk of introduction and establishment of AIS in New Bullards Reservoir and YRDP impoundments. The plan would include: (1) education of Yuba Water personnel and contractors and recreationists about AIS and their prevention; (2) inspection and cleaning of Yuba Water's equipment before use on NBBR and Project waters; (3) monitoring for quagga and zebra mussels; (4) focused American bullfrog suppression at Moran Cove and Little Oregon Creek; and (5) development of BMPs for Project activities with the potential to introduce AIS. Generally, implementation of this plan would be anticipated to result in beneficial effects to fisheries and aquatic resources through minimizing the potential for introduction and spread of aquatic invasive species in YRDP impoundments and affected waters. Activities associated with monitoring for aquatic invasive species and bullfrog suppression could include the use of motorized watercraft and have the potential to result in adverse impacts to fish and aquatic habitats through spill of fuel, oil, or other contaminants during monitoring/suppression activities. However, as described in Chapter 2 and Yuba Water (2017), implementation of YRDP Condition WR1 would minimize the potential for contaminant spills associated with YRDP activities, including implementation of AR5.

AR6 – Implement New Bullards Bar Reservoir Fish Stocking Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition AR6 would implement a NBBR Fish Stocking Plan to maintain high quality recreational fishing opportunities at NBBR. Currently, CDFW stocks NBBR with rainbow trout and kokanee on an annual basis. Implementing AR6 under the Proposed Projects has the potential to result in adverse effects to fish and aquatic habitat if the species stocked or the stocking levels were to change under AR6 relative to the Existing Condition. However, as described in Yuba Water (2017), Yuba Water would continue stocking rainbow trout and kokanee in NBBR at levels currently stocked by CDFW under the Existing Condition, and would coordinate with CDFW on an annual basis. Consequently, implementation of YRDP Condition AR6 is not anticipated to result in changed conditions relative to the bases of comparison.

AR7 – Implement Upper Yuba River Aquatic Monitoring Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition AR7 would implement an Upper Yuba River Aquatic Monitoring Plan to develop information regarding aquatic resources in the upper Yuba River area (e.g., North Yuba River, Middle Yuba River, mainstem Yuba River and Oregon Creek) in response to changes in flow conditions from the initial FERC license to the new license. Under the plan, periodic monitoring activities in the upper Yuba River area would focus on the distribution, abundance, and condition of stream fish (especially rainbow trout), benthic macroinvertebrates (BMI), foothill yellow-legged frogs (FYLF), western pond turtle (WPT), sedimentation at Our House and Log Cabin diversion dam impoundments, stream channel morphology, riparian vegetation, and LWM. Although implementation of the plan would be generally expected to benefit fish and aquatic habitat in YRDP-affected waters upstream of Englebright Dam by generating data to potentially inform adaptive management of YRDP operations, monitoring activities associated with the implementation of the plan have the potential to result in adverse effects to fish through direct effects such as disturbance or harm (through capture) of rainbow trout and Sacramento sucker, or disturbance or modification of aquatic habitats. However, as described in Yuba Water (2017), Yuba Water would implement monitoring activities according to established protocols that are approved by CDFW and USFS and that minimize the potential for adverse effects to fish and aquatic habitats.

GS1 – Implement the Erosion and Sediment Control Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition GS1 would implement an Erosion and Sediment Control Plan to apply BMPs to control site-specific erosion and sedimentation impacts during routine O&M, as well as during new construction and repair of YRDP facilities. The plan also includes emergency erosion control measures/protocols to control sedimentation during severe storm events. Plan implementation would involve: (1) use of erosion and sediment control BMPs; (2) development and implementation of Stormwater Pollution Prevention Plans (SWPPP); (3) use of USFS BMPs on USFS lands; (4) monitoring NBBR shoreline stability periodically throughout the term of the new FERC license for the YRDP; and (5) consulting with USFS annually about associated activities on USFS lands. Although implementation of the plan would generally be expected to result in beneficial effects to fish and aquatic habitats through reduction of turbidity and sedimentation due to erosion, monitoring the shoreline stability of NBBR would involve the use of motorized watercraft and thereby has the potential to result in adverse impacts to fish and aquatic habitats through spill of fuel, oil, or other contaminants during monitoring activities. However, as described in Chapter 2 and Yuba Water (2017), implementation of YRDP Condition WR1 would minimize the potential for contaminant spills associated with YRDP activities, including implementation of GS1.

GS2 – Implement Log Cabin and Our House Diversion Dams Sediment Management Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition GS2 would implement the Log Cabin and Our House Diversion Dams Sediment Management Plan to manage sediment behind Log Cabin and Our House diversion dams for the purposes of: (1) providing for dam safety and proper functioning of YRDP facilities, especially the fish release and low level outlet valves; and (2) maintaining the health of the aquatic environment downstream of the dams by allowing the passage of sediments that accumulate behind the diversion dams. Implementation of the plan would generally be expected to result in long-term beneficial impacts to fish and aquatic habitats by allowing sediment to pass below the diversion dams for the maintenance of aquatic habitats and ecosystem functions. The Log Cabin and Our House Diversion Dams Sediment Management Plan is a condition of the existing FERC license for the YRDP, and GS2 would continue implementation of the existing plan under the new YRDP license. The existing plan was developed in coordination with CDFW, USFS, and USFWS, and approved by FERC, and Yuba Water possesses and maintains environmental compliance permits to implement the plan. The existing permits include conditions, BMPs, and mitigation measures to minimize the potential for plan implementation to result in adverse effects to the environment, including fish and aquatic habitats. Consequently, implementation of YRDP Condition GS2 under the Proposed Projects is not anticipated to result in changed conditions relative to the bases of comparison.

GS3 – Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition GS3 would implement the Our House and Log Cabin Diversion Dams and NBBR Woody Material Management Plan to: (1) allow for the passage of woody material downstream of OHDD and LCDD for the benefit of the downstream aquatic ecosystems; and (2) guide the annual collection, storage, and disposal of woody material in NBBR as needed for public safety. Implementation of the plan would include

activities associated with passing woody material at Our House and Log Cabin diversion dams, which could include the minimal, short duration, and infrequent use of powered hand tools (e.g., chainsaws) if cutting of woody material is required to facilitate passage downstream of the diversion dams. Implementation of the plan also would include activities associated with the collection, storage, and disposal of woody material in NBBR, which would involve the use of powered watercraft. Both of these activities have the potential to result in adverse effects to fish and aquatic habitats through spill of fuel, oil, or other contaminants during monitoring activities. However, as described in Chapter 2 and Yuba Water (2017), implementation of YRDP Condition WR1 would minimize the potential for contaminant spills associated with YRDP activities, including implementation of YRDP Condition GS3.

RR3 – Provide Whitewater Boating Below Our House Dam

As described in Chapter 2 and Yuba Water (2017), under YRDP Condition RR3 Yuba Water would provide weekend whitewater boating flows (ranging from 600-2,000 cfs) on the Middle Yuba River downstream of OHDD during October through March, with the number of weekend days on which whitewater boating flows would be provided depending on WYT. Implementation of RR3 has the potential to result in adverse impacts to fish and aquatic habitat downstream of OHDD if the provision of whitewater flows would result in substantial increases and/or decreases in flows during periods of time when sensitive lifestages (e.g., spawning and embryo incubation) of rainbow trout or Sacramento sucker are present. However, as described in Yuba Water (2017), rainbow trout and Sacramento sucker spawning and embryo incubation do not occur during the period of time when whitewater flows would be provided. Consequently, implementation of RR3 would not result in changed conditions for fish or fish habitat.

WR4 – Implement Streamflow and Reservoir Level Compliance Monitoring

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR4 would implement the Streamflow and Reservoir Compliance Monitoring Plan to document and report compliance with streamflow and reservoir level compliance requirements in the new FERC license for the YRDP. To accommodate accurate monitoring of the higher minimum stream flows that will be required under the new YRDP license, the plan would include modifying the gaging weir crests at three locations (downstream of OHDD on the Middle Yuba River, downstream of LCDD on Oregon Creek, and downstream of NBBD on the North Yuba River), which could involve cutting the existing concrete of the weirs to widen the spill pathway. These gaging station modifications have the potential to result in adverse effects to fish and aquatic habitat in the immediate vicinity of the gaging stations through the release of associated contaminants (e.g., concrete dust). However, as described in Chapter 2 and Yuba Water (2017), implementation of YRDP Condition WR1 would minimize the potential for contaminant releases associated with YRDP activities, including implementation of YRDP Condition WR4.

WR7 – Implement Water Temperature Monitoring Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR7 would implement the Water Temperature Monitoring Plan to monitor water temperatures in YRDP reservoirs, YRDP impoundments, and YRDP-affected stream reaches of the North, Middle, and mainstem Yuba rivers and in Oregon Creek. Field activities conducted under the plan would include: (1) the

maintenance of existing real-time monitoring equipment at three streamflow gaging stations; (2) the annual deployment, maintenance (i.e., intermittent downloading, equipment replacement), and retrieval of redundant continuous water temperature monitoring equipment (i.e., data loggers) at 11 stream sites; and (3) annual collection of reservoir water temperature profile data at one site each in NBBR and Englebright Reservoir. Activities associated with real-time data collection at streamflow gaging stations and with continuous data loggers at stream sites have the potential to result in adverse effects to stream fish and aquatic habitat through disturbance of fish or modification of aquatic habitat during site visits for monitoring equipment installation, maintenance, or retrieval. However, these activities would be highly localized in spatial extent and short in duration, and, as described in Yuba Water (2017), Yuba Water would follow standard protocols for these activities which are designed to minimize potential adverse impacts to fish and aquatic habitats. Activities associated with reservoir water temperature profile data collection would involve the use of powered watercraft, which has the potential to result in adverse impacts to fish and aquatic habitat through the release of fuel, oil, or other contaminants. However, as described in Chapter 2 and Yuba Water (2017), implementation of YRDP Condition WR1 would minimize the potential for contaminant releases associated with YRDP activities, including implementation of YRDP Condition WR7. Consequently, implementation of YRDP Condition WR7 under the Proposed Projects would not result in changed conditions for fisheries resources in areas upstream of Englebright Dam.

WR8 – Implement Water Quality Monitoring Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR8 would implement the Water Quality Monitoring Plan to periodically monitor water quality in YRDP reservoirs, YRDP impoundments, and YRDP-affected stream reaches of the North, Middle, and mainstem Yuba rivers and in Oregon Creek. Field activities conducted under the plan would include: (1) *in situ* monitoring (i.e., direct, in-person monitoring of basic water quality parameters); (2) general water chemistry monitoring (i.e., samples collected for laboratory analysis of standard water quality contaminants); (3) recreation-related water quality monitoring (sample collection for laboratory analysis of total coliform, fecal coliform, *E. coli*, oil and grease, etc.); and (4) bioaccumulation sampling (i.e., sample collection for laboratory analysis of heavy metals accumulation in game fish (e.g., rainbow trout, bass, crayfish)). Activities associated with monitoring and sample collection at stream sites have the potential to result in adverse effects to stream fish and aquatic habitat through disturbance of fish or modification of aquatic habitat during site visits. However, these activities would be highly localized in spatial extent and short in duration, and, as described in Yuba Water (2017), Yuba Water would follow standard protocols for these activities which are designed to minimize potential adverse impacts to fish and aquatic habitats. Activities associated with reservoir water sample collection would involve the use of powered watercraft, which has the potential to result in adverse impacts to fish and aquatic habitat through the release of fuel, oil, or other contaminants. However, as described in Chapter 2 and Yuba Water (2017), implementation of YRDP Condition WR1 would minimize the potential for contaminant releases associated with YRDP activities, including implementation of YRDP Condition WR8. Consequently, implementation of YRDP Condition WR8 under the Proposed Projects would not result in changed conditions for fisheries resources in areas upstream of Englebright Dam.

WR9 – Implement Drought Management Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR9 would implement a Drought Management Plan in order to minimize potential drought impacts during continued YRDP O&M. Because potential options for drought management identified in the plan include relief from flow recession/ramp-down and NBBR minimum pool requirements, implementation of the plan could result in adverse effects to fish and aquatic habitat in areas upstream of Englebright Dam. However, as described in Chapter 2 and Yuba Water (2017), implementation of the plan in any drought year would include: (1) early notification of resource management agencies by Yuba Water regarding potential drought concerns; (2) if drought concerns continue, development of a specific drought management plan identifying specific proposed drought management actions; and, (3) a resource management agency consultation and approval process for specific drought management plans. Additionally, Yuba Water would only implement a specific drought management plan if the plan received all necessary approvals from the USFS, SWRCB, USFWS, NMFS, CDFW, and FERC. These plan requirements are expected to minimize the potential for implementation of WR9 to result in adverse impacts to fish and aquatic habitat. Consequently, implementation of YRDP Condition WR9 is not expected to result in changed conditions for fisheries resources.

CEQA Conclusion

As described above, other YRDP operations-related effects to riverine fisheries resources upstream of Englebright Dam under the Proposed Projects relative to both the Existing Condition and the Future Baseline would result in: (1) similar or slightly improved fisheries habitat conditions in the North Yuba River below NBBD associated with potential fish stranding due to more gradual flow reductions between May and July subsequent to some (relatively infrequent) spill events at NBBD during some Wet and Above Normal WYs; (2) similar fish passage conditions at OHDD and LCDD; (3) similar or reduced levels of fish entrainment from the Middle Yuba River and Oregon Creek into the Lohman Ridge and Camptonville tunnels; (4) similar fisheries habitat conditions related to fish stranding in Oregon Creek but with some reductions in potential stranding occurring during some Wet years; (5) more suitable fisheries habitat conditions related to potential fish stranding in the Middle Yuba River during most Wet and Above Normal WYs and during some drier WYTs; (6) similar or improved fisheries physical habitat conditions in Oregon Creek and the Middle Yuba River associated with implementation of sediment and woody material management conditions; and (7) although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency coordination. Overall, other YRDP operations-related activities would result in **less-than-significant and potentially beneficial** impacts to fisheries resources in YRDP reaches upstream of Englebright Dam and no mitigation is required.

Narrows Impacts FISH-PP-3 and FISH-FPP-3: Operations-related impacts in areas upstream of Englebright Dam.

As described above in Section 9.4.2.3, Narrows Project operations-related effects to fisheries resources upstream of Englebright Dam would be minimal when compared to the Existing Condition or Future Baseline due to the minimal potential for adverse impacts due to Narrows

Project license conditions associated with fish stocking in Englebright Reservoir and water surface elevations in Englebright Reservoir.

CEQA Conclusion

Consequently, Narrows Project operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to fisheries resources (either directly, through habitat modifications, or to migratory conditions) in areas upstream of Englebright Dam relative to both the Existing Condition and Future Baseline and no mitigation is required.

Lower Yuba River

YRDP Impacts FISH-PP-19 and FISH-FPP-19: Other operations-related impacts on fisheries resources in the lower Yuba River.

Chinook Salmon and Steelhead Redd Scouring

To determine whether the Proposed Projects have the potential to result in changes in the frequency of flows that could result in anadromous salmonid redd scouring, flow model results were examined for the lower Yuba River below Deer Creek and at Marysville to evaluate whether the Proposed Projects would result in a change in the frequency (expressed as percent of days) of flows above bankfull (5,000 cfs) and/or floodway (21,100 cfs) levels. Model results indicate that, relative to the Existing Condition and Future Baseline scenarios, the Proposed Projects (existing) and Proposed Projects (future) would both result in a difference in the number of days above bankfull and floodway flows of less than 5%. Flows would exceed the bankfull flow 4% more often at both locations under the Proposed Projects scenarios relative to the Existing Condition and Future Baseline scenarios. Flows would exceed the floodway flow 2% less often at both locations under the Proposed Projects (existing) relative to the Existing Condition. Flows would exceed the floodway flow 2% and 3% less often below Deer Creek and Marysville, respectively, under the Proposed Projects (future) relative to the Future Baseline.

Given the very low difference in the frequency when flows would exceed bankfull and floodway flows under the Proposed Projects relative to the bases of comparison, the Proposed Projects would not be expected to substantially alter geomorphic or substrate conditions in the lower Yuba River. Moreover, because Gervasi et al. (2021) found that total scour correlated best with hydrologic duration and volume above the floodway stage (which occurs 2-3% less often under the Proposed Projects), the Proposed Projects would not be expected to result in increased anadromous salmonid redd scour in the lower Yuba River, relative to the Existing Condition or Future Baseline.

Effects Related to License Conditions/Implementation Plans

AR8 – Implement Lower Yuba River Aquatic Monitoring Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition AR8 would implement the Lower Yuba River Aquatic Monitoring Plan to develop information regarding aquatic resources in the lower Yuba River downstream of Englebright Dam in response to changes in flow conditions from the existing FERC license to the new license. Under the plan, monitoring activities related to anadromous salmonids would include: (1) fish passage at Daguerre Point Dam; (2) annual

spawning population abundance; (3) temporal and spatial distributions and use of spawning habitat; (4) abundance, size and timing of emigration; and (5) interactions of anadromous fish with Narrows 2 facilities and operations. Other monitoring activities that would occur under the plan pertain to riparian vegetation cover and community structure, channel substrate and LWM, and benthic macroinvertebrate (BMI) community structure. Although implementation of the plan would be generally expected to benefit fish and aquatic habitat in the lower Yuba River by generating data to potentially inform adaptive management of YRDP operations, monitoring activities associated with the implementation of the plan have the potential to result in adverse effects to fish through direct effects such as disturbance of fish species including anadromous salmonids and green sturgeon, or through disturbance or modification of aquatic habitats. However, as described in Yuba Water (2017), Yuba Water would implement monitoring activities according to established protocols that are approved by CDFW and NMFS and that minimize the potential for adverse effects to fish and aquatic habitats. Consequently, implementation of YRDP Condition AR8 would not be expected to result in changed conditions for fisheries resources in the lower Yuba River.

FERC Article 412 – Develop and Implement a New Lower Yuba River Riparian Restoration Plan

FERC's draft license Article 412 (FERC and USACE 2019, Appendix C) states that Yuba Water is to develop a new Lower Yuba River Riparian Restoration Plan in consultation with CDFW, NMFS, USFWS and SYRCL within 6 months of issuance of a new license by FERC. Under the new plan, Yuba Water will be required to plant at least 100 total acres of riparian vegetation (including cottonwood and willow species) on the floodplain of the lower Yuba River, with plantings to occur at no fewer than four sites. Because Yuba Water will be required to develop the plan in consultation with CDFW, NMFS, and USFWS, and because the plan would be approved by FERC prior to implementation, it is expected that the plan will be required to include measures to minimize the potential for short-term adverse impacts to fish and aquatic habitat in the lower Yuba River during planting and construction activities. The long-term increase in riparian vegetation that would be expected to occur in the lower Yuba River would provide for enhanced aquatic habitat conditions for native fish species including anadromous salmonids through increased overhanging cover, instream object cover, and aquatic habitat complexity. Consequently, implementation of Article 412 in the new FERC license for the YRDP would not be expected to result in adverse effects, and would be expected to result in long-term beneficial effects to fisheries resources in the lower Yuba River.

FERC Article 410 – Develop and Implement a New Comprehensive Large Woody Material Enhancement Plan for the Lower Yuba River

FERC's draft license Article 410 (FERC and USACE 2019, Appendix C) states that Yuba Water is to develop and implement a new LWM enhancement plan for the lower Yuba River when a new license is issued by FERC. The new plan would describe the methods Yuba Water will employ to: (1) identify sources LWM; (2) store and transport LWM collected at NBBR downstream to the lower Yuba River; (3) identify suitable size classes of LWM for placement; (4) identify LWM placement locations in the lower Yuba River; (5) consult with agencies and American Whitewater on placement plan; and (6) develop a monitoring and mapping process to indicate the stability of these and future enhancements. Because Yuba Water will be required to develop the plan in

consultation with CDFW, NMFS, and USFWS, and because the plan would be approved by FERC prior to implementation, it is expected that the plan will be required to include measures to minimize the potential for short-term adverse impacts to fish and aquatic habitat in the lower Yuba River. The increase in LWM that would be expected to occur in the lower Yuba River would provide for enhanced aquatic habitat conditions for native fish species including anadromous salmonids through increased aquatic habitat complexity. Consequently, implementation of Article 410 in the new FERC license for the YRDP would not be expected to result in adverse effects, and would be expected to result in long-term beneficial effects to fisheries resources in the lower Yuba River.

WR7 – Implement Water Temperature Monitoring Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR7 would implement the Water Temperature Monitoring Plan to monitor water temperatures in YRDP reservoirs, YRDP impoundments, and YRDP-affected stream reaches of the North, Middle, and mainstem Yuba rivers and in Oregon Creek. Field activities conducted under the plan would include: (1) the maintenance of existing real-time monitoring equipment at three streamflow gaging stations; (2) the annual deployment, maintenance (i.e., intermittent downloading, equipment replacement), and retrieval of redundant continuous water temperature monitoring equipment (i.e., data loggers) at 11 stream sites; and (3) collection of reservoir water temperature profile data at one site each in NBBR and Englebright Reservoir. Activities associated with real-time data collection at streamflow gaging stations and with continuous data loggers at stream sites in the lower Yuba River have the potential to result in adverse effects to stream fish and aquatic habitat through disturbance of fish or modification of aquatic habitat during site visits for monitoring equipment installation, maintenance, or retrieval. However, these activities would be highly localized in spatial extent and short in duration, and, as described in Yuba Water (2017), Yuba Water would follow standard protocols for these activities which are designed to minimize potential adverse impacts to fish and aquatic habitats. Consequently, implementation of YRDP Condition WR7 under the Proposed Projects would not be expected to result in changed conditions for fisheries resources in the lower Yuba River.

WR8 – Implement Water Quality Monitoring Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR8 would implement the Water Quality Monitoring Plan to periodically monitor water quality in YRDP reservoirs, YRDP impoundments, and YRDP-affected stream reaches of the North, Middle, and mainstem Yuba rivers and in Oregon Creek. Field activities conducted under the plan would include: (1) *in situ* monitoring (i.e., direct, in-person monitoring of basic water quality parameters); (2) general water chemistry monitoring (i.e., samples collected for laboratory analysis of standard water quality contaminants); (3) recreation-related water quality monitoring (sample collection for laboratory analysis of total coliform, fecal coliform, *E. coli*, oil and grease, etc.); and (4) bioaccumulation sampling (i.e., sample collection for laboratory analysis of heavy metals accumulation in game fish (e.g., rainbow trout, bass, crayfish)). Activities associated with monitoring and sample collection at stream sites in the lower Yuba River have the potential to result in adverse effects to stream fish and aquatic habitat through disturbance of fish or modification of aquatic habitat during site visits. However, these activities would be highly localized in spatial extent and short in duration, and, as described in Yuba Water (2017), Yuba Water would follow standard protocols

for these activities which are designed to minimize potential adverse impacts to fish and aquatic habitats. Consequently, implementation of YRDP Condition WR8 under the Proposed Projects would not be expected to result in changed conditions for fisheries resources in the lower Yuba River.

WR9 – Implement Drought Management Plan

As described in Chapter 2 and Yuba Water (2017), YRDP Condition WR9 would implement a Drought Management Plan to minimize potential drought impacts during continued YRDP O&M. Because potential options for drought management identified in the plan include relief from minimum flow and flow reduction criteria downstream of Englebright Dam, implementation of the plan has the potential to result in adverse effects to fish and aquatic habitat in the lower Yuba River. However, as described in Chapter 2 and Yuba Water (2017), implementation of the plan in any drought year would include: (1) early notification of resource management agencies by Yuba Water regarding potential drought concerns; (2) if drought concerns continue, development of a specific drought management plan identifying specific proposed drought management actions; and, (3) a resource management agency consultation and approval process for specific drought management plans. Additionally, Yuba Water would only implement a specific drought management plan if the plan received all necessary approvals from the USFS, SWRCB, USFWS, NMFS, CDFW, and FERC. These plan requirements are expected to minimize the potential for implementation of WR9 to result in adverse impacts to fish and aquatic habitat in the lower Yuba River. Consequently, implementation of YRDP Condition WR9 would not be expected to result in additional adverse conditions for fisheries resources in the lower Yuba River during drought.

CEQA Conclusion

As described above, other YRDP operations-related effects to fisheries resources in the lower Yuba River would be minimal when compared to the Existing Condition or Future Baseline due to the limited potential for additional adverse impacts associated with: (1) Chinook salmon redd dewatering; (2) Chinook salmon and steelhead redd scouring; (3) juvenile stranding and isolation due to planned operations or unanticipated forced outages; and (4) implementation of YRDP license conditions/implementation plans. Although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency coordination. Consequently, other YRDP operations-related activities under the Proposed Projects would result in **less-than-significant** impacts to fisheries resources (either directly, through habitat modification, or to migratory conditions) in the lower Yuba River relative to both the Existing Condition and Future Baseline and no mitigation is required.

Narrows Impacts FISH-PP-4 and FISH-FPP-4: Operations-related impacts in the lower Yuba River.

Because Narrows Project operations would not be substantially changed relative to existing operations, there would be **less-than-significant** impacts to fisheries resources (either directly, through habitat modification, or to migratory conditions) in the lower Yuba River due to Narrows

Project operations-related activities under the Proposed Projects relative to both the Existing Condition and Future Baseline.

Areas Downstream of the Lower Yuba River

YRDP Impacts FISH-PP-20 and FISH-FPP-20: Operations-related impacts on special-status fish species in areas downstream of the lower Yuba River.

The proportionate changes in monthly average monitored Feather River flows (at Boyd's Landing) (see Table 8.5-6 in Chapter 8) due to changes in average monthly modeled outflows from the lower Yuba River under the Proposed Projects (existing) and Proposed Projects (future) scenarios relative to the bases of comparison (see Appendix 4C) are about 0% during most months of the year, with some 1% increases and decreases during some months. The proportionate change in monthly average monitored Sacramento River flows (at Verona) (see Table 8.5-6 in Chapter 8) due to changes in average monthly modeled outflows from the lower Yuba River under the Proposed Projects (existing) and Proposed Projects (future) scenarios relative to the bases of comparison (see Appendix 4C) are about 0% during all months of the year.

Most anadromous salmonid (and green and white sturgeon) spawning occurs upstream of the lower Yuba River confluence within the Feather River and upstream of the lower Feather River confluence within the Sacramento River. Because the Feather River downstream of the Yuba River and the Sacramento River downstream of the Feather River primarily serve as migratory corridors, the primary lifestages in these reaches considered in this DEIR include the adult and juvenile migratory (and transient rearing) lifestages for all runs of Chinook salmon, steelhead, and Pacific lamprey, and the migration and rearing lifestages of green sturgeon and white sturgeon, Sacramento splittail, American shad and striped bass.

CEQA Conclusion

Based on the very low to negligible proportionate changes in Feather River and Sacramento River flows downstream of the Yuba River resulting from implementation of the Proposed Projects, migration and habitat conditions for adult or juvenile Chinook salmon, steelhead, green sturgeon, Pacific lamprey, and white sturgeon would not be substantially altered relative to the bases of comparison. Therefore, impacts of YRDP operations on fish species in areas downstream of the lower Yuba River under the Proposed Projects would be **less than significant** relative to both the Existing Condition and Future Baseline.

9.5.1.3 Consistency with HCPs/NCCPs

YRDP Impacts FISH-PP-21 and FISH-FPP-21: YRDP consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.

Based on the analyses presented above, construction and operations of the YRDP under the Proposed Projects would not conflict with any relevant habitat conservation plans (e.g., Yolo County HCP/NCCP, Pacific Lamprey Regional Conservation Plan) under the Existing Condition and Future Baseline. Therefore, these impacts would be **less than significant**.

Narrows Impacts FISH-PP-5 and FISH-FPP-5: Narrows Project consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.

Based on the analyses presented above, construction and operations of the Narrows Project under the Proposed Projects would not conflict with any relevant habitat conservation plans (e.g., Yolo County HCP/NCCP, Pacific Lamprey Regional Conservation Plan) under the Existing Condition and Future Baseline. Therefore, these impacts would be **less than significant**.

9.5.2 Alternative 1 Analysis

As described in Chapter 3, in response to a March 8, 2021, FERC AIR, Yuba Water developed Alternative 1 as a proposal for the YRDP and upstream projects to equitably allocate water to provide cooler water temperatures in the lower Yuba River for federally listed species protection from July through November during Dry and Critical WYs. Alternative 1 proposes to reoperate the release of 15,600 acre-ft of additional flow during September into October that would be provided from the YB/DS projects during spring of Dry and Critical WYs. This reoperation would only be possible if water is made available by the YB/DS projects – which is subject to approval of a new license term by FERC. Based on previous analyses carried out by Yuba Water in response to FERC in coordination with NMFS and CDFW, actions to improve water temperatures in the lower Yuba River primarily focused on reducing water temperatures during the early portion of the spring-run Chinook salmon spawning and incubation period (i.e., September and October).

As described in Chapters 2 and 3, Alternative 1 would include all non-flow components of the Proposed Projects and all Narrows Project operations under the Proposed Projects. These are described in Section 2.5.1 (Proposed YRDP under New FERC License) and Section 2.5.2 (Proposed Narrows Project under New FERC License) of Chapter 2. In addition to the operations and components of the Proposed Projects, Alternative 1 also includes modifications to YRDP operations and additional non-flow measures, including the Englebright Variable Water Surface Elevation Proposed Measure AIR-2. The Englebright Variable Water Surface Elevation Proposed Measure AIR-2 would include management of flows into and out of USACE's Englebright Reservoir to increase the target water surface elevation from 519 ft msl to 525 ft msl from August 25 through September 10, maintaining the target elevation of 525 ft. msl through October 15, and implementing an October 16-31 ramp-down. Alternative 1 consists of all three components of the provision and reoperation of an additional 15.6 TAF, managing Englebright Reservoir water surface elevations, and use of the dual intake structure at NBBD.

9.5.2.1 Construction-Related Impacts

Because construction activities would be the same under Alternative 1 relative to the Proposed Projects, the analysis of construction-related effects presented in Section 9.5.1.1 (above) would be unchanged and also would apply to Alternative 1.

9.5.2.1.1 Areas Upstream of Englebright Dam

YRDP Impact FISH-Alt1-1: Construction-related impacts in areas upstream of Englebright Dam.

As described above, YRDP construction-related activities upstream of Englebright Dam would result in temporary and localized effects and would not substantially disturb or otherwise directly or indirectly impact fish species, their habitat, or migratory behaviors. Consequently, construction-related activities would result in **less-than-significant** impacts to fisheries and aquatic resources upstream of Englebright Dam relative to the Existing Condition and no mitigation is required.

Narrows Impact FISH-Alt1-1: Construction-related impacts in areas upstream of Englebright Dam.

Because there is no construction associated with the Narrows Project, there would be **no impacts** to fisheries resources upstream of Englebright Dam under the Narrows Project due to construction-related activities relative to the Existing Condition.

9.5.2.1.2 Lower Yuba River

YRDP Impact FISH-Alt1-2: Construction-related impacts in the lower Yuba River.

Given the minimal and less than significant impacts of construction-related activities upstream of Englebright Dam and associated lack of propagation of those effects into the lower Yuba River, and given that there are no construction activities under the YRDP downstream of Englebright Dam, construction-related activities under Alternative 1 would result in **less-than-significant** impacts to fisheries and aquatic resources in the lower Yuba River relative to the Existing Condition and no mitigation is required.

Narrows Impact FISH-Alt1-2: Construction-related impacts in the lower Yuba River.

Because there is no construction associated with the Narrows Project, there would be **no impacts** to fisheries resources downstream of Englebright Dam under the Narrows Project due to construction-related activities relative to the Existing Condition.

9.5.2.2 Operations-Related Impacts

9.5.2.2.1 Simulated Habitat Conditions under Alternative 1 compared to the Existing Condition

As described in Chapter 4, this DEIR evaluates impacts based on modeling-dependent analyses for the Alternative 1 scenario relative to the Existing Condition scenario for informational purposes only. Implementation of Alternative 1 requires proposed license conditions in addition to 4(e) conditions for the YB/DS projects, which include increased flows in the Middle Yuba River and South Yuba River (as well as in Canyon Creek and Fordyce Creek). Comparing impacts of Alternative 1 (which includes YB/DS 4(e) conditions) to the Existing Condition (which does not include YB/DS 4(e) conditions) has very limited applicability for evaluation of impacts that are based on modeled hydrologic and water temperature conditions, as explained in Chapter 4. The DEIR does not use the Existing Condition scenario to draw significance conclusions for potential

impacts based on modeling-dependent analyses for Alternative 1. Therefore, all significance conclusions for impacts based on modeling-dependent analyses under Alternative 1 are based on the comparison between the Alternative 1 and Future Baseline scenarios (see below). However, for informational purposes, detailed analyses of modeled flow and water temperature results for the Alternative 1 scenario relative to the Existing Condition scenario are provided by species and lifestage in YRDP reaches upstream of Englebright Dam, YB/DS reaches upstream of the YRDP, and in the lower Yuba River in Appendix 9C. Potential impacts of Alternative 1 that are not based on modeling-dependent analyses are based on comparison to the Existing Condition.

9.5.2.2.2 Simulated Habitat Conditions under Alternative 1 compared to the Future Baseline

YRDP Reaches Upstream of Englebright Dam

Flow and water temperature model results were examined for the YRDP reaches upstream of Englebright Dam to evaluate potential impacts to target fish species and lifestages that could occur under Alternative 1 relative to the Future Baseline. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.4.1 of Appendix 9C (pages 9C-76 through 9C-79). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for YRDP reaches upstream of Englebright Dam under the Alternative 1 scenario relative to the Future Baseline scenario are shown in Figures C4-1 through C4-209 and Tables C4-1 through C4-177 in Appendix 9D.

Generally, simulated changes in flows in the North Yuba and Oregon Creek under Alternative 1 vs Future Baseline are essentially equivalent or very similar to the changes in flows described above for the Proposed Projects (see Appendix 4B). Differences in flows in the Middle Yuba River (reaches below OHDD) and upper Yuba River upstream of Colgate under the Alternative 1 vs Future Baseline comparison relative to the Proposed Projects comparisons exhibit the same directional trends but with further increases in flows under the Alternative 1 comparison during July through November. Average monthly flows in the Middle Yuba River are particularly higher during November, December and April through July when average monthly flows increase by about 50 to 200 cfs (50 to more than 200 percent higher) depending on location (see Appendix 4B and Table C4-Flow-8 through C4-Flow-10 of Appendix 4C). Average monthly flows in the upper Yuba River above Colgate are particularly higher during July and August when monthly average flows increase by approximately 100 to 150 percent (about 50-90 cfs higher) (see Appendix 4B and Table C4-Flow-12).

In the upper Yuba River downstream of Colgate, flows are similar under Alternative 1 relative to the Future Baseline during most months and WYTs but are substantially lower during April of Critical WYs, and substantially higher during September of Dry and Critical WYs (see Appendix 4B and Table C4-Flow-13 of Appendix 4C).

Differences in water temperatures in the North Yuba River and Oregon Creek under the Alternative 1 vs Future Baseline comparison are generally equivalent or similar to those described for the Proposed Projects comparisons.

In the Middle Yuba River, water temperatures remain similar under the Alternative 1 vs Future Baseline comparison during most months but provide cooler temperatures during April through July (by about 1-1.5°F) downstream of Oregon Creek (see Appendix 4B and Table C4-Temp-10 through C4-Temp-12 of Appendix 4C). The upper Yuba River upstream of Colgate exhibits cooler water temperatures during April through September (by about 1-3°F) (see Appendix 4B and Table C4-Temp-14). Water temperature differences in the upper Yuba River downstream of Colgate exhibit similar average monthly water temperatures during most months but cooler temperatures during November and December (by up to about 1°F) and warmer temperatures during April through June (by up to about 1.5°F) (see Appendix 4B and Table C4-Temp-15).

YRDP Impact FISH-FAlt1-3: Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, rainbow trout were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD and the upper Yuba River. Based on species and lifestage-specific flow-dependent habitat availability and thermal suitability by river and reach (see Appendix 9C), YRDP operations-related activities would result in the following habitat conditions under Alternative 1 relative to the Future Baseline.

- More suitable conditions for rainbow trout in the North Yuba River due to more suitable habitat availability conditions, including higher or substantially higher amounts of adult (19-44% higher during summer and fall) and juvenile (12-24% during winter, summer, and fall) rainbow trout habitat during most seasons, higher (7-10% higher) rainbow trout spawning habitat in all WYTs, and more suitable thermal suitabilities for adults and juveniles during summer, and for spawning.
- More suitable conditions for rainbow trout in Oregon Creek due to similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability for spawning (about 5-19% more), and improved thermal suitability for adults and juveniles during summer (about 30% reduction in exceedance of 68°F) below LCDD.
- Slightly more suitable conditions for rainbow trout in the Middle Yuba River due to similar or less suitable habitat availability conditions for juveniles (about 1-10% less habitat), improved habitat availability conditions for adults in the upper reaches (about 6-24% more habitat) and for spawning in the lowermost reach (about 18% more habitat), and similar or slightly improved thermal suitability conditions.
- Overall more suitable conditions for rainbow trout in the upper Yuba River due to more suitable habitat availability conditions for adults (16-23% more habitat during summer and fall), less suitable habitat availability for juveniles (7-14% less habitat) upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate (about 70% lower exceedance of 68°F during summer), and similar habitat availability and thermal suitability conditions for all rainbow trout lifestages downstream of Colgate. Improved water temperature conditions for rainbow trout in the upper Yuba River was a primary management objective of the Relicensing Participants' (including USFWS, USFS, CDFW, BLM) *Minimum Streamflows for the North Yuba River* condition, which balanced instream

habitat and water temperature conditions in the North Yuba River reach and upper Yuba River downstream of the confluence of the North Yuba River and Middle Yuba River (USDOI 2017; USFS 2018).

Overall, rainbow trout habitat conditions would be more suitable in the YRDP reaches due to increased habitat availability and more suitable water temperature conditions, particularly for the adult and spawning lifestages.

CEQA Conclusion

YRDP operations-related activities in the North Yuba River downstream of NBBD, Oregon Creek downstream of LCDD, Middle Yuba River downstream of OHDD, and upper Yuba River would not substantially disturb or otherwise adversely impact rainbow trout, their habitat, or migratory behaviors under Alternative 1 when compared to the Future Baseline. Operations-related activities under Alternative 1 would result in **less-than-significant and potentially beneficial** impacts to rainbow trout in the YRDP reaches upstream of Englebright Dam relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-4: Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, hardhead were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on the detailed analyses described in Appendix 9C and the modeling data products in Appendix 9D, YRDP operations-related activities would result in the following habitat conditions under Alternative 1 relative to the Future Baseline.

- Overall, less suitable habitat conditions for hardhead in a portion of the NBBD Reach of the North Yuba River, where hardhead have not been documented. Although habitat availability would be improved (including about 11-24% more adult habitat and 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As described above under the Proposed Projects analysis, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) and adopted by FERC and USACE (2019) targeting the provision of suitable rainbow trout physical habitat and water temperatures in the North Yuba River downstream of NBBD, and providing thermal benefits for rainbow trout in the upper Yuba River downstream of the North Yuba River. Because hardhead were not observed in the North Yuba River downstream of NBBD during YRDP Relicensing studies, and because suitable water temperatures for hardhead spawning primarily occur downstream of the North Yuba River under existing conditions, it is uncertain whether less suitable thermal habitat conditions for adults and juveniles during summer and early fall would directly impact hardhead in this reach.

- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable habitat availability for adults during summer (about 13% more habitat) and improved thermal suitability for spawning (water temperatures occurring within the 59-64°F range 15% more often) upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate (although water temperatures outside of the hardhead preference range would persist under Alternative 1 and the Future Baseline for adults and juveniles during spring through fall).

Overall, habitat conditions would be less suitable for hardhead in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with slightly more suitable habitat conditions in the 7.5-mile long upper Yuba River due to improved conditions for adult habitat availability and spawning thermal suitability upstream of Colgate (5.8-mile reach) and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). As described above, based on hardhead life history (including upstream spawning migrations, downstream movement of adults and juveniles subsequent to spawning, and the preference for warm water temperatures) and the generally non-preferred thermal conditions for hardhead spawning in the North Yuba River under existing conditions, hardhead spawning and subsequent rearing is most likely to occur in the upper Yuba River. As described above, hardhead juveniles and adults are present in Englebright Reservoir. Because Englebright Reservoir conditions (e.g., water surface elevations) would not substantially change under Alternative 1 relative to the Future Baseline, Englebright Reservoir would continue to serve as a refuge for hardhead.

In addition to the slightly more suitable habitat conditions for hardhead in the upper Yuba River, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass (which reportedly prefer summer water temperatures of about 20-27°C (68-81°F) (Moyle 2002). For example, smallmouth bass was found to be one of the most abundant fish species in the upper Yuba River, comprising about 77% of fishes observed in surveys during 2013 near RM 39.6 (immediately downstream of the North Yuba River/Middle Yuba River confluence) and comprising 93-98% of the fish observed during both 2012 and 2013 at RM 35 (upstream of Colgate) (Yuba Water 2017). However, in contrast to the reach upstream of Colgate, smallmouth bass were not observed downstream of Colgate (where water temperatures are much colder) during the snorkel surveys, and only 1 smallmouth bass was captured incidentally during electrofishing surveys (Yuba Water 2017). The introduction of black bass has been identified as one of the key factors in hardhead population declines in the Central Valley (Moyle 2002; Brown and Moyle 1993), including in the South Yuba River (Moyle et al. 1995). Gard (2004, as cited in Cocherell et al. 2014) found that smallmouth bass limited the abundance of hardhead prey (native cyprinids) in the South Yuba River. Because water temperatures during the summer in the upper Yuba River below the North Yuba River/Middle Yuba River confluence would occur within the 68-81°F smallmouth bass preference range about only 10% of the time relative to about 80% of the time under the Future Baseline, the upper Yuba River may become less preferred by smallmouth bass, which could indirectly benefit hardhead utilization and survival in this reach.

CEQA Conclusion

YRDP operations-related activities would not substantially disturb or otherwise adversely impact hardhead or hardhead, their habitat, or migratory behaviors when compared to the Future Baseline.

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for hardhead in the longer 7.5-mile long upper Yuba River would be slightly more suitable. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit hardhead utilization and survival in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for hardhead colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for hardhead when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under Alternative 1 would result in **less-than-significant** impacts to hardhead in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-5: Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento pikeminnow was evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on species and lifestage-specific flow-dependent habitat availability and thermal suitability by river and reach (see Appendix 9C), YRDP operations-related activities would result in the following habitat conditions under Alternative 1 relative to the Future Baseline.

- Overall, less suitable conditions for Sacramento pikeminnow in a portion of the NBBD Reach of the North Yuba River. Although habitat availability would be improved (including about 11-24% more adult habitat and 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.
- Similar conditions for pikeminnow in the upper Yuba River due to more suitable physical habitat availability conditions for adults upstream of Colgate during summer (about 12% more habitat), less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer), and similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions would be less suitable for Sacramento pikeminnow in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with similar habitat conditions in the 7.5-mile long upper Yuba River due to

generally similar conditions for adults and juveniles but improved adult physical habitat availability upstream of Colgate (5.8-mile reach), and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). Although conditions would be less preferable in the lower portion of the North Yuba River, suitable conditions for Sacramento pikeminnow would still persist in the larger upper Yuba River. As described above for hardhead, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass, which could indirectly benefit Sacramento pikeminnow in this reach.

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento pikeminnow in the longer 7.5-mile long upper Yuba River would be similar. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento pikeminnow in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for Sacramento pikeminnow colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for Sacramento pikeminnow when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under Alternative 1 would result in **less-than-significant** impacts to Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento sucker was evaluated in the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD, and the upper Yuba River. Based on species and lifestage-specific flow-dependent habitat availability and thermal suitability by river and reach (see Appendix 9C), YRDP operations-related activities would result in the following habitat conditions under Alternative 1 relative to the Future Baseline.

- Overall, less suitable conditions for Sacramento sucker in a portion of the NBBD Reach of the North Yuba River. Although physical habitat availability would be improved for juveniles (10-12% more habitat during summer and fall) and adults (10-20% more habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (water temperatures in the 61-77°F WTI value range about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.
- Similar conditions for Sacramento sucker in Oregon Creek due to overall similar habitat availability and water temperature conditions across the three locations evaluated.

- Similar conditions for Sacramento sucker in the Middle Yuba River due to: (1) slightly more suitable adult habitat conditions (5-11% more habitat at the uppermost location); (2) slightly less suitable juvenile habitat conditions (7-14% less habitat during most seasons at all three locations); and (3) similar water temperature conditions for adults and juveniles in the Middle Yuba River.
- Similar conditions for Sacramento sucker in the upper Yuba River due to: (1) similar or more suitable physical habitat availability for adults upstream of Colgate; (2) less suitable habitat availability for juveniles upstream of Colgate; (3) less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer); and (4) similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions for Sacramento sucker would be similar in the YRDP reaches upstream of Englebright Dam. Although conditions would be less preferable in the lower portion of the North Yuba River, suitable conditions for Sacramento sucker would still persist in the remainder of the YRDP reaches (upper Yuba River, Middle Yuba River and Oregon Creek).

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento sucker in the remaining rivers (upper Yuba River, Middle Yuba River and Oregon Creek) would be similar. In addition, less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento sucker in this reach. Consequently, operations-related activities under Alternative 1 would result in **less-than-significant** impacts to Sacramento sucker in the YRDP reaches upstream of Englebright Dam relative to the Future Baseline and no mitigation is required.

YB/DS Reaches Upstream of the YRDP

YB/DS Impact FISH-FAlt1-1: Operations-related impacts on fisheries resources in YB/DS reaches upstream of the YRDP.

Alternative 1 includes a contribution of 15.6 TAF of water from the YB/DS projects that would be provided under new FERC licenses for those projects. The following discussion provides a programmatic analysis of the potential indirect impacts to fisheries resources in waterbodies upstream of the YRDP associated with this component of Alternative 1 compared to the Future Baseline. The programmatic evaluation of potential impacts to fish species that could be affected in YB/DS reaches upstream of the YRDP (i.e., the Middle Yuba River upstream of OHDD, South Yuba River upstream of Englebright Reservoir, Canyon Creek and Fordyce Creek) under Alternative 1 relative to the Future Baseline is provided in Section 1.4.2 of Appendix 9C (pages 9C-79 through 9C-91) and is summarized below.

Alternative 1 would result in flow increases during April into May of Dry and Critical WYs. Relative to the Future Baseline, based upon habitat-flow relationships, these flow increases under Alternative 1 would be expected to result in greater flow-dependent habitat availability in the focal reaches of the Middle Yuba and South Yuba rivers (i.e., below Milton Diversion Dam and below Lake Spaulding Dam) for rainbow trout, particularly the adult and spawning lifestages which were targeted for improvement by YB/DS Relicensing Participants (FERC 2014). Sacramento sucker adult habitat availability would be expected to be generally similar or lower in the Middle Yuba River, and generally similar in most reaches of the South Yuba River. Sacramento sucker juvenile habitat availability would be expected to be similar in the Middle Yuba River and similar or reduced in the South Yuba River. Hardhead and Sacramento pikeminnow habitat availability for adults and juveniles in the Middle Yuba River (Kanaka Creek Sub-reach) and South Yuba River (Humbug Creek Sub-reach) would be expected to be similar during most Dry and Critical years. YB/DS operations under Alternative 1 would be expected to result in minimal effects to rainbow trout spawning habitat in Canyon and Fordyce creeks due to their later spawning period (i.e., May through July). Relative to the Future Baseline, implementation of Alternative 1 would be expected to result in generally similar or relatively small changes (increases and decreases) in species and lifestage-specific habitat availability by reach and river. Overall, these changes are expected to be relatively minor and could occur for a relatively short duration (i.e., 1 to 1.5 months) and during relatively few years (i.e., Dry and Critical years).

The relatively large increase in flow that would occur as part of providing 15.6 TAF from YB/DS during April-May of Dry and Critical WYs potentially could result in more rainbow trout adult and spawning habitat, but has some potential to result in adverse effects on rainbow trout spawning associated with potential redd scouring/dewatering. However, as described above, the potential impacts associated with the flow increase and subsequent decrease during April and May in the YB/DS reaches would depend on the specific Alternative 1 operations, including whether provision of the 15.6 TAF is from reductions in diversions out of the upper Yuba River Watershed or from releases from storage, and which reservoirs and streams were utilized to release the flow. Spreading out the flow releases of the 15.6 TAF, such as in the NID (2023) scenario that uses both Lake Spaulding and Bowman Lake, would allow for less substantial changes in flow fluctuations in a given stream. In addition, use of the South Yuba River, which exhibits some relative flashiness during the Spring of some Dry and Critical WYs under Future Baseline conditions, would further reduce the differences in the hydrograph and associated flow fluctuation-related effects on fish species relative to use of other streams. Implementation of measures to provide a gradual reduction of flows after peaking in April or May (as shown in NID 2023 modeling in Canyon Creek and the South Yuba River) also could reduce the potential for adverse fisheries habitat-related effects on fish stranding/isolation. In addition, as previously discussed, flow increases during April would be expected to have relatively minimal effects on rainbow trout spawning in both Canyon and Fordyce creeks.

Based on review of habitat-flow relationships and simulated water temperatures during April and May, habitat availability and thermal suitability would not be substantially affected for the only special-status fish species in the YB/DS reaches (hardhead), which may be present in the lower reaches of the Middle Yuba and South Yuba rivers (i.e., Kanaka and Humbug sub-reaches, respectively). The key hardhead lifestage that could be present in these reaches during April and May is adult spawning, which generally occurs during April through June (or potentially into August; Moyle 2002). Based on the example NID (2023) scenarios implementing the 15.6 TAF,

average monthly flows could increase in the South Yuba River Humbug Sub-reach from approximately 250-300 cfs up to approximately 600-750 cfs. Examination of the adult hardhead habitat-flow relationship for this reach (NID and PG&E 2010) shows that adult hardhead habitat would increase slightly from flows of about 200 to 400 cfs, and then remain steady at flows up to about 1,500 cfs. Therefore, adult hardhead habitat availability would be similar or slightly improved under the example NID (2023) scenarios. Examination of annual daily time-series of estimated water temperatures in the South Yuba River above Englebright Reservoir and Middle Yuba River above OHDD (see NID 2023) over the NID (2023) modeling period of record (WY 1976-2008) shows that the initiation of hardhead spawning (as defined by water temperatures reaching and staying above 59°F) primarily occurs between mid-May and mid-July during about 91-97% of years in the South Yuba River and Middle Yuba River. Therefore, relatively minor and brief water temperature reductions (and potential spawning initiation delays) during April would not be expected to substantially affect hardhead spawning initiation or hardhead spawning habitat conditions relative to the Future Baseline. Based on the initiation of hardhead spawning occurring primarily during mid-May or later, the flow increase and subsequent decrease under Alternative 1 would have a limited potential for impacts on hardhead stranding or isolation, given that the juvenile lifestage is typically considered to be the most susceptible fish lifestage to stranding or isolation. Implementation of flow cessation requirements (as shown in NID 2023 modeling) would further reduce the potential for adverse fisheries effects related to fish stranding/isolation.

In general, flow-dependent habitat and water temperature conditions for the fish species evaluated in the YB/DS reaches under Alternative 1 relative to the Future Baseline would not be expected to be substantially affected based on the analyses summarized above and considering the operational flexibility of the upstream YB/DS projects and the manner in which the 15.6 TAF could be provided.

As stated by USFWS (2023), although the release of additional water (to meet the 15.6 TAF in Dry and Critical WYs) would have the potential to result in adverse environmental consequences on aquatic habitats (particularly on foothill yellow legged frogs[19]), USFWS offered to provide technical assistance to FERC and YB/DS Licensees to help develop a flow release schedule that would not cause adverse impacts to native aquatic species. In addition, implementation of both flow increase and decrease ramping rates, as well as geographic source of the flow provision (such as Canyon Creek and the South Yuba River), could minimize or avoid the potential for impacts on fisheries resources in the YB/DS reaches.

CEQA Conclusion

As described above, although the provision of the 15.6 TAF from YB/DS has the potential to result in some impacts to fisheries resources in YB/DS reaches upstream of the YRDP, habitat conditions are not expected to be substantially affected for rainbow trout, hardhead or other fish species evaluated in the YB/DS reaches under Alternative 1 based on the flow-dependent habitat availability and water temperature analyses summarized above and because of: (1) operational flexibility (e.g., geographic source) of the YB/DS reservoirs in providing the 15.6 TAF; (2) permutations in the allocation (e.g., variable amounts) among YB/DS reservoirs; (3) the potential for provision of the 15.6 TAF through reductions in diversions (and exports out of the upper Yuba

[19] Impacts to foothill yellow legged frogs are addressed in Chapter 10 – Biological Resources.

River Watershed), releases from storage, or a combination thereof; (4) implementation of ramping rates (both increases and decreases); and (5) resource agency technical assistance in fashioning the releases to minimize impacts to aquatic species. For purposes of this programmatic analysis, it is reasonably foreseeable that YB/DS operations under Alternative 1 would include available protective measures developed in collaboration with regulatory agencies to ensure that impacts to fisheries resources (rainbow trout, hardhead, Sacramento pikeminnow, and Sacramento sucker) in the YB/DS reaches upstream of the YRDP would be less than significant. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available. Therefore, impacts to special-status fish species (hardhead) and other fisheries resources (rainbow trout, Sacramento pikeminnow, and Sacramento sucker) in the YB/DS reaches upstream of the YRDP are expected to be **less than significant**.

Lower Yuba River

Flow and water temperature model results were examined for the lower Yuba River downstream of Englebright Dam at Smartsville, Parks Bar, DPD, and Marysville to evaluate potential impacts to target fish species and lifestages under Alternative 1 relative to the Future Baseline. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.4.3 of Appendix 9C (pages 9C-91 through 9C-110). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for the lower Yuba River under Alternative 1 relative to the Future Baseline are shown in Figures C4-1 through C4-115 and Tables C4-1 through C4-19 in Appendix 9E.

As described in Appendix 4B, monthly average flows in the lower Yuba River under Alternative 1 relative to the Future Baseline are generally similar (e.g., +/- 5%) over the entire simulation period and during most months by WYT except for primarily September through December when flows are higher during Dry and Critical WYs. Flows are particularly higher (by about 15-36%) during September of Dry and Critical WYs (see Appendix 4B and Tables C4-Flow-1 through C4-Flow-4 in Appendix 4C).

Monthly average water temperatures in the lower Yuba River are similar (e.g., different by less than 0.5°F) during most months over the entire simulation period but are warmer during May and June and are cooler during September. Water temperatures by WYT also are typically similar during most months but are warmer during May and/or June of most WYTs and are cooler during September, particularly during Dry and Critical WYs (cooler by about 1-4°F) (see Appendix 4B and Tables C4-Temp-1 through C4-Temp-4 in Appendix 4C).

YRDP Impact FISH-FAlt1-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River.

Relative to the Future Baseline scenario, the Alternative 1 scenario would be expected to result in:

- Essentially equivalent or very similar levels of flow-dependent physical habitat for the spring-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- More suitable conditions for spring-run Chinook salmon adult immigration and holding (April through September) due to generally similar probabilities of exceeding adult immigration and holding WTI values at Smartsville, DPD, and Marysville during spring, summer, and early fall, but with more suitable (i.e., decreased probabilities of exceeding the adult immigration UO WTI value) conditions at Marysville during September, as well as decreased probabilities of exceeding the adult holding UO WTI value at DPD during September.
- More suitable conditions for spring-run Chinook salmon spawning (September through mid-October) and embryo incubation (September through December) due to decreased probabilities of exceeding spawning and embryo incubation WTI values at Smartsville and Parks Bar during September through mid-October.
    - Over the entire evaluation period, Alternative 1 relative to the Future Baseline provides slightly higher lengths of ≤ 56°F habitat over most of the September-October period, with about 1 more mile during the second week of September and during about two weeks of October. Alternative 1 provides about 0.5-1 more mile of ≤ 58°F habitat during September into the first week of October.
    - During Dry and Critical WYs, Alternative 1 provides about 1 to 4 more miles of thermally optimal (≤ 56°F) spawning habitat from the second week of September to the last week of October, with 1 mile or less of thermally optimal spawning habitat under the Future Baseline relative to 2 to 4 miles under Alternative 1. Alternative 1 provides about 1 to 4 more miles of thermally tolerable (≤ 58°F) spawning habitat from the first week of September through the second week of October, with about 5 miles of thermally tolerable spawning habitat under the Future Baseline relative to 8-9 miles under Alternative 1 during most of September.
- Similar conditions for spring-run Chinook salmon juvenile rearing (year-round but primarily mid-November through June), downstream movement (November through June), and smoltification (November through June) due to similar probabilities of exceeding the juvenile rearing, downstream movement, and salmon smoltification WTI values, but with a slightly increased probability (6%) of exceeding the juvenile downstream movement UO WTI value at DPD during the summer months (when a small proportion of juvenile spring-run Chinook salmon would be expected to remain in the lower Yuba River).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for spring-run Chinook salmon are expected to be more suitable under Alternative 1 than under the Future Baseline due to improved water temperature suitabilities for adult holding, spawning, and embryo incubation lifestages during September and early October. Particularly beneficial water temperatures would occur under Alternative 1 by providing substantially higher amounts of thermally optimal (1-4

more miles) and thermally tolerable (1-4 more miles) spawning and embryo incubation habitat during the spawning season of September through mid-October of Dry and Critical WYs, when thermally suitable conditions are most limiting under the Future Baseline. Without Alternative 1, only about 0.5 to 1 mile of thermally optimal spawning habitat occurs under the Future Baseline during the entire month of September of Dry and Critical WYs.

CEQA Conclusion

As described above, YRDP operations-related activities would not substantially disturb or otherwise adversely impact spring-run Chinook salmon, their habitat, or migratory behaviors in the lower Yuba River. YRDP operations would result in more suitable conditions for spring-run Chinook salmon in the lower Yuba River due to improved water temperature suitabilities for adult holding, spawning, and embryo incubation lifestages during September and early October, consistent with FERC's directive in the AIR. Alternative 1 would provide substantially more suitable water temperature conditions for spring-run Chinook salmon spawning and embryo incubation when thermal suitability is most limiting under the Future Baseline. Consequently, YRDP operations under Alternative 1 would result in **beneficial** impacts to spring-run Chinook salmon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-8: Operations-related impacts on fall-run Chinook salmon in the lower Yuba River.

Relative to the Future Baseline scenario, the Alternative 1 scenario would be expected to result in:

- Essentially equivalent levels of flow-dependent physical habitat for the fall-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for fall-run Chinook salmon adult immigration and staging (July through November) conditions due to similar probabilities of exceeding the adult immigration and staging WTI values at DPD and Marysville.
- Slightly more suitable conditions for fall-run Chinook salmon spawning and embryo incubation period (October through March) due to similar conditions during November through March and slightly more suitable water temperature conditions during October (of the October through December spawning period with peak spawning expected to occur during November) of Dry and Critical WYs due to increased length (up to 4 miles) of thermally suitable (thermally optimal and thermally tolerable) habitat.
- Similar conditions for fall-run Chinook salmon juvenile rearing and downstream movement (mid-December through June) due to similar probabilities of exceeding the juvenile rearing and downstream movement WTI values at Smartsville, DPD, and Marysville during winter and spring (when the vast majority of juvenile fall-run Chinook salmon would be expected to be rearing or moving downstream), but with an increased probability (9%) of exceeding the juvenile rearing and downstream movement UO WTI value at DPD during June (when a small proportion of juvenile fall-run Chinook salmon would be expected to remain in the lower Yuba River).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for fall-run Chinook salmon are expected to be slightly more suitable under Alternative 1 relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities would not substantially disturb or otherwise adversely impact fall-run Chinook salmon, their habitat, or migratory behaviors in the lower Yuba River. YRDP operations would result in slightly more suitable conditions for fall-run Chinook salmon in the lower Yuba River due to similar habitat availabilities and slightly more suitable water temperature conditions for spawning during October of Dry and Critical WYs. Consequently, YRDP operations under Alternative 1 would result in **less-than-significant** impacts to fall-run Chinook salmon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-9: Operations-related impacts on steelhead in the lower Yuba River.

Relative to the Future Baseline, Alternative 1 would be expected to result in:

- Essentially equivalent or very similar levels of flow-dependent physical habitat for the steelhead spawning, fry rearing, and juvenile rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Similar conditions for steelhead adult immigration and holding (September through March) due to similar probabilities of exceeding the adult immigration and holding WTI values during fall, winter, and spring.
- Similar conditions for steelhead spawning and embryo incubation (January through April) and less suitable conditions for embryo incubation during May due to similar probabilities of exceeding the spawning and embryo incubation WTI values at Smartsville and Parks Bar during the vast majority of the spawning and embryo incubation period, but with an increased (17%) probability of exceeding the UO WTI value at Smartsville, and increased (8-10%) probabilities of exceeding the UT and UO WTI values at Parks Bar during May. Water temperatures under Alternative 1 would remain below the UT WTI value during May at Smartsville about 95% of the time.
- Similar conditions for steelhead juvenile rearing (year-round) and downstream movement (year-round but primarily February through July) due to similar probabilities of exceeding the juvenile rearing WTI values during all seasons at Smartsville and Parks Bar, and similar probabilities of exceeding the downstream movement WTI values during winter, spring, and summer at DPD and Marysville.
- Similar conditions for steelhead smoltification (November through April) due to generally similar probabilities of exceeding the steelhead smoltification WTI values during fall, winter, and spring at Smartsville and Parks Bar, but with a slightly increased (7%) probability of exceeding the UO WTI value at Smartsville during the spring (April), and with slightly decreased (6-7%) probabilities of exceeding the UO WTI value at both Smartsville and Parks Bar during the fall (November).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for steelhead are expected to be similar under Alternative 1 relative to the Future Baseline for most lifestages, but less suitable for steelhead embryo incubation during May due to increased water temperatures. The increased water temperatures during the spring months (particularly during May) under Alternative 1 relative to the Future Baseline are due to the modeling characterization of the use of the New Colgate Powerhouse upper intake (Colgate upper intake) during March through May. As prescribed by proposed Water Quality Certification (WQC) Condition 7 (which was incorporated into the Proposed Projects and alternatives, see Chapter 2 and Appendix 2E), the Colgate upper intake would be used during March through May in all years except when NBBR storage is below 648,800 acre-feet during the March through May period. Proposed WQC Condition 7 also includes flexibility such that "[i]*n consultation with CDFW and NMFS, Licensee may propose to delay the starting date and implement an earlier ending date for utilization of the upper intake for improving water temperature conditions in the lower Yuba River*" and "[i]*f supported by CDFW and NMFS, Licensee may adjust the period for use of the upper intake*" (Appendix 2E, p. 20). However, the modeling characterization of the use of the Colgate upper intake under Alternative 1 does not incorporate this flexibility in the timing of upper intake use that would be expected to occur to improve water temperature conditions. Consequently, implementation of proposed WQC 7 would incorporate resource agency consultation and coordination, which would be expected to minimize or avoid adverse impacts to steelhead spawning and incubation during May due to increased water temperatures resulting from use of the Colgate upper intake.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact steelhead, their habitat, or migratory behaviors. YRDP operations would generally result in similar conditions for steelhead in the lower Yuba River due to similar habitat availabilities and generally similar water temperature suitabilities for most lifestages, but modeling results indicate that operations could potentially result in increased water temperatures during March through May due to the use of the Colgate upper intake, which could result in reduced thermal suitabilities for steelhead embryo incubation during May. While a reduction in thermal suitability could represent a potentially significant impact to steelhead, as described above, implementation of proposed WQC Condition 7 under Alternative 1 would incorporate resource agency consultation and coordination regarding the timing of use of the Colgate upper intake to improve water temperatures, which would be expected to minimize or avoid potential adverse impacts to steelhead spawning and incubation during May due to increased water temperatures resulting from use of the Colgate upper intake. Therefore, YRDP operations under Alternative 1 would result in **less-than-significant** impacts to steelhead in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-10: Operations-related impacts on green sturgeon in the lower Yuba River.

Relative to the Future Baseline scenario, the Alternative 1 scenario would be expected to result in:

- Essentially equivalent or similar levels of flow-dependent physical habitat for green sturgeon adult holding and spawning due to generally similar flows during most of the

year and in most WYTs, but with lower (by about 9%) amounts of spawning habitat on average during Dry WYTs.

- Slightly less suitable conditions for green sturgeon adult immigration and holding (April through June) due to an increased (9%) probability of exceeding the green sturgeon adult immigration and holding WTI value at DPD during June but similar probabilities of exceedance during April and May at DPD.
- Generally similar conditions for green sturgeon spawning and embryo incubation (June and July) due to generally similar probability of exceeding the green sturgeon spawning and embryo incubation WTI value during the summer.
- Similar conditions for green sturgeon adult post-spawn holding (June through mid-February) due to similar probabilities of exceeding the green sturgeon adult post-spawn holding WTI value during summer, fall, and winter at DPD and Marysville, but with a slightly increased (6%) probability of exceeding the green sturgeon adult holding WTI value during the summer months at DPD.
- Similar conditions for green sturgeon juvenile rearing and emigration (July through January) due to similar probabilities of exceeding the green sturgeon juvenile rearing and emigration WTI value during summer, fall, and winter at DPD and Marysville.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for green sturgeon are expected to be similar under Alternative 1 relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact green sturgeon, their habitat, or migratory behaviors. YRDP operations would result in similar conditions for green sturgeon in the lower Yuba River due to overall similar habitat availabilities and generally similar water temperature suitabilities for most lifestages, but slightly less suitable water temperature conditions for adult holding and immigration (April through June) at DPD during June, which represents the end of the holding period and overlaps with the spawning period (and the spawning WTI at DPD is rarely exceeded during the June through July spawning period). Consequently, YRDP operations under Alternative 1 would result in **less-than-significant** impacts to green sturgeon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-11: Operations-related impacts on lamprey in the lower Yuba River.

Relative to the Future Baseline scenario, the Alternative 1 scenario would be expected to result in:

- Essentially equivalent levels of flow-dependent physical habitat for the lamprey spawning and ammocoete rearing lifestages due to minimal to negligible changes in flow during all seasons over the period of record and in all WYTs.
- Generally similar conditions for lamprey adult immigration (March through June) due to generally similar probabilities of exceeding the lamprey adult immigration WTI value during spring and summer, but with a slightly increased (6%) probability of

exceeding the WTI value at DPD during June (when a small proportion of lamprey adult immigration is expected to be occurring).

- Similar conditions for lamprey spawning (March through July) and incubation (March through August) due to similar probabilities of exceeding the lamprey spawning and incubation WTI value during spring and summer at Smartsville and DPD.
- Similar conditions for lamprey ammocoete rearing (year-round but primarily during December through February) due to similar probabilities of exceeding the lamprey ammocoete rearing WTI value during all seasons at DPD and Marysville.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for lamprey are expected to be similar under Alternative 1 relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact lamprey, their habitat, or migratory behaviors. YRDP operations would result in similar conditions for lamprey in the lower Yuba River due to similar habitat availabilities and water temperature suitabilities for all lifestages. Consequently, YRDP operations under Alternative 1 would result in **less-than-significant** impacts to lamprey in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-12: Operations-related impacts on white sturgeon in the lower Yuba River.

There are very limited anecdotal observations of the presence of white sturgeon in the lower Yuba River, Nonetheless, because there is the potential for adult white sturgeon to occur in the lower Yuba River below DPD, review of monthly water temperature exceedance distributions at Marysville indicate infrequent (<2%) exceedance of the 77°F adult immigration and holding WTI value during the warmest months of the year (i.e., June through September) under both the Alternative 1 and Future Baseline scenarios.

CEQA Conclusion

YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact white sturgeon, their habitat, or migratory behaviors when compared to the Future Baseline. YRDP operations would result in similar conditions for white sturgeon in the lower Yuba River due to similar water temperature suitabilities for adults that may potentially occur downstream of DPD. Consequently, YRDP operations under Alternative 1 would result in **less-than-significant** impacts to white sturgeon, their habitat, and migratory conditions in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-13: Operations-related impacts on other fish species in the lower Yuba River.

Because of the limited changes to flows and thermal conditions described above, and because the thermal tolerances of hardhead, Central California roach, striped bass, and American shad are

typically broader than those identified for anadromous salmonids, YRDP operations-related impacts to hardhead, Central California roach, striped bass, and American shad, their habitat, or migratory behaviors are expected to be minimal to negligible.

CEQA Conclusion

Consequently, YRDP operations under Alternative 1 would result in **less-than-significant** impacts to these fish species and their habitat in the lower Yuba River relative to the Future Baseline and no mitigation is required.

9.5.2.2.3 Additional Operations-Related Impacts

Areas Upstream of Englebright Reservoir

Reservoirs

YRDP Impact FISH-FAlt1-14: Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir.

Based on the monthly frequency of 6-foot or greater reductions in modeled NBBR water surface elevations during March through June over the period of simulation, Alternative 1 would result in similar or slightly reduced (6%) frequency of 6-foot or greater reductions relative to the Existing Condition. Consequently, relative to the Existing Condition, Alternative 1 would provide similarly suitable conditions for warmwater fish in NBBR.

Based on the monthly frequency of 6-foot or greater reductions in modeled NBBR water surface elevations during March through June over the period of simulation, Alternative 1 would result in the same frequency of 6-foot or greater reductions relative to the Future Baseline. Consequently, relative to the Future Baseline, Alternative 1 would provide similarly suitable conditions for warmwater fish in NBBR.

CEQA Conclusion

As described above, YRDP operations-related activities in NBBR would not substantially disturb or otherwise adversely impact warmwater fisheries or their habitat in NBBR. Habitat conditions for warmwater fisheries in NBBR would be similar due to similar NBBR water surface elevations during March through June. Consequently, operations-related activities under Alternative 1 would result in **less-than-significant** impacts to warmwater fisheries in NBBR relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-15: Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir.

Based on modeled NBBR storage volumes summarized in Table C3-Reservoir-1 in Appendix 4C, Alternative 1 would not be expected to result in an increased frequency of reductions in average monthly storage of sufficient magnitude or duration to result in reductions to coldwater pool volume during the months of April through November over the entire period of simulation and in each WYT, relative to the Existing Condition. Consequently, relative to the Existing Condition,

Alternative 1 would be expected to provide similarly suitable conditions for coldwater fish in NBBR.

Based on modeled NBBR storage volumes summarized in Table C4-Reservoir-1 in Appendix 4C, Alternative 1 also would not be expected to result in an increased frequency of reductions in average monthly storage of sufficient magnitude or duration to result in reductions to coldwater pool volume during the months of April through November over the entire period of simulation and in each WYT, relative to the Future Baseline. Consequently, relative to the Future Baseline, Alternative 1 would be expected to provide similarly suitable conditions for coldwater fish in NBBR.

CEQA Conclusion

As described above, YRDP operations-related activities in NBBR would not substantially disturb or otherwise adversely impact coldwater fisheries or their habitat in NBBR. Habitat conditions for coldwater fisheries in NBBR would be similar due to similar NBBR storages during April through November. Consequently, operations-related activities under Alternative 1 would result in **less-than-significant** impacts to coldwater fisheries in NBBR relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt1-16: Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries.

As described above for warmwater fish in NBBR, Alternative 1 would not be expected to result in substantial reductions in NBBR water surface elevations during the March through June timeframe relative to either the Existing Condition or Future Baseline. Consequently, relative to baseline conditions, Alternative 1 would be expected to provide similarly suitable conditions for fish access to NBBR tributaries.

CEQA Conclusion

YRDP operations-related activities would not substantially affect migratory conditions of fish species accessing tributaries to NBBR. The ability of reservoir fish to access tributaries to NBBR would be similar due to similar water surface elevations in NBBR during March through June. Consequently, operations-related activities under Alternative 1 would result in **less-than-significant** impacts to fish access to NBBR tributaries relative to the Future Baseline and no mitigation is required.

YRDP Impacts FISH-Alt1-17 and FISH-FAlt1-17: Other operations-related impacts on YRDP reservoir fisheries in areas upstream of Englebright Dam.

Entrainment

New Colgate Power Tunnel

Similar to the Proposed Projects, Alternative 1 would also include use of the upper New Colgate Power Tunnel intake during March through May. Under Alternative 1, NBBR average monthly water surface elevations during March through May in Critical WYs (when the lowest NBBR

water surface elevations would occur) would be essentially equivalent or higher than those described above under the Proposed Projects (see Tables C3-Reservoir-2 and C4-Reservoir-2 in Appendix 4C). Consequently, Alternative 1 would not be expected to result in increased levels of fish entrainment into the New Colgate Power Tunnel relative to the bases of comparison.

Narrows 2 Power Tunnel Intake and Narrows Tunnel via USACE's Englebright Intake

Under Alternative 1, Yuba Water would manage flows into and out of USACE's Englebright Reservoir to: (1) increase the target water surface elevation from 519 ft to 525 ft from August 25 through September 10; (2) maintain the target elevation through October 15; and (3) ramp-down the water surface elevation from 525 ft to 519 ft from October 16 through October 31. During the rest of the year, Alternative 1 would result in essentially equivalent Englebright water surface elevations relative to the Existing Condition and Future Baseline bases of comparison (see Tables C3-Reservoir-4 and C4-Reservoir-4 in Appendix 4C). Given the low abundance of fish documented in Yuba Water's reservoir gillnet sampling near Englebright Dam in 2012 (Yuba Water 2017), it is not likely that the relatively minor changes in Englebright Reservoir water surface elevations that would occur annually during September through October under Alternative 1 would result in increased levels of fish entrainment into the Narrows 2 Power Tunnel and Narrows Tunnel relative to the bases of comparison.

CEQA Conclusion

As described above, other operations-related activities at NBBR and Englebright Reservoir would not substantially disturb or otherwise adversely impact reservoir fisheries. Other YRDP operations-related effects to reservoir fisheries upstream of Englebright Dam under Alternative 1 relative to the Existing Condition and Future Baseline would be minimal due to: (1) similar levels of NBBR fish entrainment into the New Colgate Power Tunnel based on similar NBBR WSEs; and (2) similar levels of Englebright Reservoir fish entrainment into the Narrows 2 Power Tunnel and Narrows Tunnel due to similar Englebright Reservoir WSEs. Consequently, other YRDP operations-related activities under Alternative 1 would result in **less-than-significant** impacts to reservoir fisheries resources in areas upstream of Englebright Dam and no mitigation is required.

YRDP Impacts FISH-Alt1-18 and FISH-FAlt1-18: Other operations-related impacts on fisheries resources in reaches upstream of Englebright Dam.

Effects Related to Diversion Dams

Because Alternative 1 would not result in any changed YRDP operations at Our House and Log Cabin diversion dams (or at the Lohman Ridge and Camptonville tunnels) different from those identified for the Proposed Projects, the effects to fish and aquatic habitat related to operations at the diversion dams under Alternative 1 would be the same as those identified in Section 9.5.1.2.3 above for the Proposed Projects.

Effects Related to License Conditions/Implementation Plans

Because Alternative 1 would not result in any additional or changed conditions or implementation plans under the new FERC license for the YRDP or Narrows Project, the effects to fish and aquatic habitat in areas upstream of Englebright Dam related to YRDP and Narrows Project license

conditions/implementation plans under Alternative 1 would be the same as those identified in Section 9.5.1.2.3 above for the Proposed Projects.

CEQA Conclusion

As described above, other YRDP operations-related potential effects to riverine fisheries resources upstream of Englebright Dam under Alternative 1 relative to the Existing Condition and the Future Baseline would result in: (1) similar or slightly improved fisheries habitat conditions in the North Yuba River below NBBD associated with potential fish stranding due to more gradual flow reductions between May and July subsequent to some (relatively infrequent) spill events at NBBD during some Wet and Above Normal WYs; (2) similar fish passage conditions at OHDD and LCDD; (3) similar or reduced levels of fish entrainment from the Middle Yuba River and Oregon Creek into the Lohman Ridge and Camptonville tunnels; (4) similar fisheries habitat conditions related to fish stranding in Oregon Creek but with some reductions in potential stranding occurring during some Wet years; (5) more suitable fisheries habitat conditions related to potential fish stranding in the Middle Yuba River during most Wet and Above Normal WYs and during some drier WYTs; (6) similar or improved fisheries physical habitat conditions in Oregon Creek and the Middle Yuba River associated with implementation of sediment and woody material management conditions; and (7) although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency coordination. Overall, due to implementation of the new YRDP license and associated conditions, other YRDP operations-related effects under Alternative 1 would result in **less-than-significant and potentially beneficial** impacts to fisheries resources in YRDP reaches upstream of Englebright Dam relative to the Existing Condition and the Future Baseline, and no mitigation is required.

Narrows Impacts FISH-Alt1-3 and FISH-FAlt1-3: Operations-related impacts in areas upstream of Englebright Dam.

As described above in Section 9.4.2.3, Narrows Project operations-related effects to fisheries resources upstream of Englebright Dam would be minimal when compared to the Existing Condition or Future Baseline due to the minimal potential for adverse impacts due to Narrows Project license conditions associated with fish stocking in Englebright Reservoir and water surface elevations in Englebright Reservoir. Consequently, Narrows Project operations-related activities would result in **less-than-significant** impacts to fisheries resources (either directly, through habitat modification, or to migratory conditions) in areas upstream of Englebright Dam relative to both the Existing Condition and Future Baseline and no mitigation is required.

Lower Yuba River

YRDP Impacts FISH-Alt1-19 and FISH-FAlt1-19: Other operations-related impacts on fisheries resources in the lower Yuba River.

Chinook Salmon and Steelhead Redd Scouring

To determine whether Alternative 1 has the potential to result in changes in the frequency of flows that could result in anadromous salmonid redd scouring, flow model results were examined for the

lower Yuba River below Deer Creek and at Marysville to evaluate whether Alternative 1 would result in a change in the frequency (expressed as percent of days) of flows above bankfull (5,000 cfs) and/or floodway (21,100 cfs) levels. Model results indicate that, relative to the Existing Condition and Future Baseline scenarios, Alternative 1 would result in a ±5% or less difference in the number of days above bankfull and floodway flows. Flows would exceed the bankfull flow 5% and 4% more often below Deer Creek and at Marysville, respectively, under Alternative 1 relative to the Existing Condition, and would exceed bankfull flow 4% more often at both locations under Alternative 1 relative to the Future Baseline. Flows would exceed the floodway flow with the same frequency below Deer Creek and 2% less often at Marysville under Alternative 1 relative to the Existing Condition. Flows would exceed the floodway flow 2% and 3% less often below Deer Creek and at Marysville, respectively, under Alternative 1 relative to the Future Baseline.

Given the very low difference in the frequency when flows would exceed bankfull and floodway flows under Alternative 1 relative to the bases of comparison, Alternative 1 would not be expected to substantially alter geomorphic or substrate conditions in the lower Yuba River. Moreover, because Gervasi et al. (2021) found that total scour correlated best with hydrologic duration and volume above the floodway stage (which occurs 0-3% less often under Alternative 1), Alternative 1 would not be expected to result in increased anadromous salmonid redd scour in the lower Yuba River, relative to the Existing Condition and the Future Baseline.

Effects Related to License Conditions/Implementation Plans

Because the license conditions and implementation plans included for the Proposed Projects also would be included under the new FERC license for the YRDP or Narrows Project under Alternative 1, the effects to fish and aquatic habitat in the lower Yuba River related to YRDP and Narrows Project license conditions and implementation plans under Alternative 1 would be the same as those identified in Section 9.5.1.2.3 above for the Proposed Projects. Although additional license terms would be applied to the YRDP under Alternative 1 for the re-operation of the 15.6 TAF from the YB/DS projects to reduce water temperatures in the lower Yuba River, the impacts of this re-operation are evaluated through simulated habitat conditions for fisheries resources (Section 9.5.2.2).

CEQA Conclusion

As described above, other YRDP operations-related effects to fisheries resources in the lower Yuba River would be minimal when compared to the Existing Condition or Future Baseline due to the limited potential for additional adverse impacts associated with: (1) Chinook salmon redd dewatering; (2) Chinook salmon and steelhead redd scouring; (3) juvenile stranding and isolation due to planned operations or unanticipated forced outages; and (4) implementation of YRDP license conditions/implementation plans. Although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency coordination. Consequently, other YRDP operations-related activities under Alternative 1 would result in **less-than-significant** impacts to fisheries resources (either directly, through habitat modification, or to migratory conditions) in the lower Yuba River relative to the Existing Condition and Future Baseline and no mitigation is required.

Narrows Impacts FISH-Alt1-4 and FISH-FAlt1-4: Operations-related impacts in the lower Yuba River.

Because Narrows Project operations would not be substantially changed relative to existing operations, there would be **less-than-significant impacts** to fisheries resources (either directly, through habitat modification, or to migratory conditions) in the lower Yuba River due to the Narrows Project operations-related activities under Alternative 1 relative to both the Existing Condition and the Future Baseline.

Areas Downstream of the Lower Yuba River

YRDP Impact FISH-FAlt1-20: Operations-related impacts on special-status fish species in areas downstream of the lower Yuba River.

The proportionate changes in monthly average monitored Feather River flows (at Boyd's Landing) (see Table 8.5-6 in Chapter 8) due to changes in average monthly modeled outflows from the lower Yuba River under Alternative 1 relative to the Existing Condition and Future Baseline (see Appendix 4C) range from 1% increases to 1% decreases during all months of the year. The proportionate changes in monthly average monitored Sacramento River flows (at Verona) (see Table 8.5-6 in Chapter 8) due to changes in average monthly modeled outflows from the lower Yuba River under Alternative 1 relative to the bases of comparison (see Appendix 4C) are about 0% during most months of the year when compared to the Existing Condition and during all months of the year when compared to the Future Baseline.

Most anadromous salmonid (and green and white sturgeon) spawning occurs upstream of the lower Yuba River confluence within the Feather River and upstream of the lower Feather River confluence within the Sacramento River. Because the Feather River downstream of the Yuba River and the Sacramento River downstream of the Feather River primarily serve as migratory corridors, the primary lifestages in these reaches considered in this DEIR include the adult and juvenile migratory (and transient rearing) lifestages for all runs of Chinook salmon, steelhead, and Pacific lamprey, and the migration and rearing lifestages of green sturgeon and white sturgeon, Sacramento splittail, American shad and striped bass.

CEQA Conclusion

Based on the very low to negligible proportionate changes in Feather River and Sacramento River flows downstream of the Yuba River resulting from implementation of Alternative 1, migration and habitat conditions for adult or juvenile Chinook salmon, steelhead, green sturgeon, Pacific lamprey, and white sturgeon would not be substantially altered relative to the Future Baseline. Therefore, impacts of YRDP operations under Alternative 1 on fish species in areas downstream of the lower Yuba River relative to the Future Baseline would be **less than significant**.

9.5.2.3 Consistency with HCPs/NCCPs

YRDP Impact FISH-FAlt1-21: YRDP consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.

Based on the analyses presented above, the YRDP under Alternative 1 would not conflict with any relevant habitat conservation plans (e.g., Yolo County HCP/NCCP, Pacific Lamprey Regional Conservation Plan) under the Future Baseline. Therefore, this impact would be **less than significant**.

Narrows Impact FISH-FAlt1-5: Narrows Project consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.

Based on the analyses presented above, the Narrows Project under Alternative 1 would not conflict with any relevant habitat conservation plans (e.g., Yolo County HCP/NCCP, Pacific Lamprey Regional Conservation Plan) relative to the Future Baseline. Therefore, this impact would be **less than significant**.

9.5.3 Alternative 2 Analysis

As described in Chapter 3, Yuba Water developed Alternative 2 in response to comments from the SWRCB on the NOP for this DEIR (see Appendix 1B). Alternative 2 would include all non-flow components of the Proposed Projects. Similarly, Alternative 2 includes the same modeled operational assumptions as the Proposed Projects, including FERC's (2019) FEIS flow requirements in the North Yuba, Middle Yuba, and Yuba rivers that will become part of a new license for the YRDP and use of the variable-elevation intake for the New Colgate Powerhouse (see Chapter 2). The YRDP and Narrows Project would be operated in a manner consistent with all applicable requirements of the applicable Bay-Delta water quality control plan.

Compared to the Proposed Projects, Alternative 2 includes modifications to YRDP and Narrows Project operations (as well as similar operational changes to the upstream YB/DS projects under new FERC licenses) to comply with the following additional regulatory requirements under the SWRCB Draft Bay-Delta Plan Update:

- A requirement to provide 55% of the unimpaired Middle Yuba River flow
- A requirement to provide 55% of the unimpaired South Yuba River flow
- A requirement to provide 55% of the unimpaired Yuba River flow at its confluence with the Feather River
- A minimum end-of-September NBBR storage of 600 TAF in Wet, Above Normal, and Below Normal years
- A minimum end-of-September NBBR storage of 400 TAF in Dry and Critical years

Given the lack of operational specificity in the SWRCB Draft Bay-Delta Plan Update regulatory pathway, Alternative 2 includes a representative operational scenario that could be implemented in response to the SWRCB Draft Bay-Delta Plan Update (see Chapter 3 for additional description).

Alternative 2 would include all non-flow components of the Proposed Projects and all Narrows Project operations under the Proposed Projects. These are described in Section 2.5.1 (Proposed

YRDP under New FERC License) and Section 2.5.2 (Proposed Narrows Project under New FERC License) of Chapter 2.

9.5.3.1 Construction-Related Impacts

Because construction activities would be the same under Alternative 2 relative to the Proposed Projects, the analysis of construction-related effects presented in Section 9.5.1.1 (above) would be unchanged and also would apply to Alternative 2.

9.5.3.1.1 Areas Upstream of Englebright Dam

YRDP Impact FISH-Alt2-1: Construction-related impacts in areas upstream of Englebright Dam.

As described above, YRDP construction-related activities upstream of Englebright Dam would result in temporary and localized effects and would not substantially disturb or otherwise directly or indirectly impact fish species, their habitat, or migratory behaviors. Consequently, construction-related activities under Alternative 2 would result in **less-than-significant** impacts to fisheries and aquatic resources upstream of Englebright Dam relative to the Existing Condition and no mitigation is required.

Narrows Impact FISH-Alt2-1: Construction-related impacts in areas upstream of Englebright Dam.

Because there is no construction associated with the Narrows Project, there would be **no impacts** to fisheries resources upstream of Englebright Dam under the Narrows Project due to construction-related activities relative to the Existing Condition.

9.5.3.1.2 Lower Yuba River

YRDP Impact FISH-Alt2-2: Construction-related impacts in the lower Yuba River.

Given the minimal and less than significant impacts of construction-related activities upstream of Englebright Dam on fish species upstream of Englebright Dam and given that there are no construction activities under the YRDP downstream of Englebright Dam, construction-related activities under Alternative 2 would result in **less-than-significant** impacts to fisheries and aquatic resources in the lower Yuba River relative to the Existing Condition and no mitigation is required.

Narrows Impact FISH-Alt2-2: Construction-related impacts in the lower Yuba River.

Because there is no construction associated with the Narrows Project, there would be **no impacts** to fisheries resources downstream of Englebright Dam under the Narrows Project relative to the Existing Condition due to construction-related activities.

9.5.3.2 Operations-Related Impacts

9.5.3.2.1 Simulated Habitat Conditions under Alternative 2 compared to the Existing Condition

As described in Chapter 4, this DEIR evaluates the impacts of the Alternative 2 scenario relative to the Existing Condition scenario for informational purposes only. Because this comparison has very limited applicability, as explained in Chapter 4, the DEIR does not use the Existing Condition scenario to draw significance conclusions for impacts resulting from Alternative 2. All significance conclusions for the Alternative 2 scenario are based on the comparison between the Alternative 2 and Future Baseline scenarios (see below). However, for informational purposes, detailed analyses of modeled flow and water temperature results for the Alternative 2 scenario relative to the Existing Condition scenario are provided by species and lifestage in YRDP reaches upstream of Englebright Dam and in the lower Yuba River in Appendix 9C.

9.5.3.2.2 Simulated Habitat Conditions under Alternative 2 compared to the Future Baseline

YRDP Reaches Upstream of Englebright Dam

Flow and water temperature model results were examined for the YRDP reaches upstream of Englebright Dam to evaluate potential impacts to target fish species and lifestages that could occur under Alternative 2 relative to the Future Baseline. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses and narrative descriptions of modeled flow-dependent habitat availability and thermal suitability results are provided by species and lifestage in Section 1.6.1 of Appendix 9C (pages 9C-139 through 9C-141). Figures and tables comparing fisheries habitat availability outputs and water temperature exceedance probabilities for YRDP reaches upstream of Englebright Dam under Alternative 2 relative to the Future Baseline are shown in Figures C6-1 through C6-209 and Tables C6-1 through C6-177 in Appendix 9D.

As described in Appendix 4B (see Tables C6-Flow-5 through C6-Flow-13 and Tables C6-Temp-6 through C6-Temp-15 in Appendix 4C), Alternative 2 would generally result in the following flow and water temperature conditions relative to the Future Baseline:

- North Yuba River downstream of NBBD
    - Changes in flows and water temperatures in the North Yuba River under Alternative 2 are very similar to those described for the Proposed Projects. Average monthly flows are particularly higher during June through September of Below Normal, Dry and Critical WYs, when flows often increase from about 8-9 cfs up to about 32-62 cfs. Water temperatures are particularly lower during June through September when water temperatures over the entire simulation period are reduced by about 5 to 6°F below NBBD and by about 10 to 14°F at the above Yuba River node.
- Oregon Creek downstream of LCDD
    - Monthly average flows and water temperatures under Alternative 2 exhibit similar trends as described for the Proposed Projects. Flows are consistently higher during January through June. Average monthly flows are particularly

higher during April through June when flows below LCDD often increase by approximately 10-30 cfs (about 50-200% higher) except for Wet WYs when flows significantly increase by about 30-90 cfs (about 100 to over 300 percent higher). Water temperatures are cooler by about 1-3°F during July through September below LCDD over most of the monthly exceedance distributions.

- Middle Yuba River downstream of OHDD
    - Monthly average flows under Alternative 2 exhibit similar trends as described for the Proposed Projects. Flows are higher year-round over the entire simulation period and by WYT. Average monthly flows are particularly higher during November, December and April through July when average monthly flows increase by about 50 to 350 cfs (50 to more than 300 percent higher) depending on location.
    - Monthly average water temperatures in the Middle Yuba River are similar year-round below OHDD and are typically cooler during April through July of most WYTs downstream of Oregon Creek. Water temperature exceedance distributions are often lower by about 1-3°F at the above YR node during April through July.
- Upper Yuba River
    - Monthly average flows in the upper Yuba River upstream of Colgate Powerhouse are substantially higher during April through December over the entire simulation period and by WYT, and are higher year-round during drier WYTs. Average monthly flows are particularly higher during July and August when overall average flows increase by approximately 100 to 200 percent (about 50-100 cfs higher). Monthly average flows downstream of Colgate Powerhouse are higher during December through May of drier WYs (typically by about 20-400 cfs or 20-100% higher) and are lower during July through September of most WYTs (typically by about 100-400 cfs or 20-30% lower).
    - Monthly average water temperatures in the upper Yuba River upstream of Colgate Powerhouse are lower during March through October over the entire simulation period and by WYT, particularly at the upstream node (below MYR) during June through September where water temperatures over the entire simulation period are reduced by about 5 to 8°F. Monthly average water temperatures downstream of Colgate Powerhouse are cooler during November and December and are warmer during April through August. Average water temperatures increase by approximately 1.5 to 3.5°F during May through August of Dry and Critical WYTs.

YRDP Impact FISH-FAlt2-3: Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, rainbow trout were evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD and the upper Yuba River. Based on species and lifestage-specific flow-dependent habitat availability and thermal suitability by river and reach (see

Appendix 9C), YRDP operations-related activities would result in the following habitat conditions under Alternative 2 relative to the Future Baseline.

- More suitable conditions for rainbow trout in the North Yuba River[20] due to: (1) higher or substantially higher amounts of adult habitat (19-44% higher during summer and fall; 9% higher during winter); (2) higher or substantially higher amounts of juvenile habitat during most seasons (12-24% during winter, summer, and fall); (3) higher spawning habitat (7-9% higher) in all WYTs; and (4) more suitable thermal conditions for adults and juveniles during summer, and for spawning.
- More suitable conditions for rainbow trout in Oregon Creek[20] due to overall generally similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability for spawning (5-20% more), and improved thermal suitability (about 30% reduction in exceedance of 68°F) for adults and juveniles during summer below LCDD.
- Generally similar conditions for rainbow trout in the Middle Yuba River due to: (1) substantially increased adult habitat (10-24% more habitat) during winter, summer and fall at the two upstream locations; (2) substantially increased habitat availability (31%) for spawning at the downstream-most location; (3) substantially reduced habitat availability (11-17%) for spawning at the two uppermost locations evaluated; (4) substantial reductions (about 14-29%) in juvenile rearing habitat during winter and spring at both of the two uppermost locations evaluated; and (5) substantial reductions (12-18%) in juvenile rearing habitat during winter and spring at the downstream-most location. Thermal suitability conditions would be overall similar but slightly improved (about 10% lower exceedance of the spawning WTI value in the Middle Yuba River downstream of Oregon Creek). Overall, conditions for rainbow trout in the Middle Yuba River under Alternative 2 would generally be similar to those under the Future Baseline.
- Overall more suitable conditions for rainbow trout in the upper Yuba River due to more suitable habitat availability conditions for adults (16-20% more habitat during summer and fall), less suitable habitat availability for juveniles (5-16% less habitat) upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate (about 70% lower exceedance of 68°F), and similar habitat availability and thermal suitability conditions for all rainbow trout lifestages downstream of Colgate. Improved water temperature conditions for rainbow trout in the upper Yuba River was a primary management objective of the Relicensing Participants' (including USFWS, USFS, CDFW, BLM) *Minimum Streamflows for the North Yuba River* condition, which balanced instream habitat and water temperature conditions in the North Yuba River reach and upper Yuba River downstream of the confluence of the North Yuba River and Middle Yuba River (USDOI 2017; USFS 2018).

[20] The more suitable rainbow trout habitat conditions in the North Yuba River and Oregon Creek are due to increased habitat availability and more suitable water temperature conditions resulting from implementation of the Proposed Projects component of Alternative 2, upon which the additional unimpaired flows are layered.

CEQA Conclusion

YRDP operations-related activities in the North Yuba River downstream of NBBD, Oregon Creek downstream of LCDD, Middle Yuba River downstream of OHDD, and upper Yuba River would not substantially disturb or otherwise adversely impact rainbow trout, their habitat, or migratory behaviors under Alternative 2 when compared to the Future Baseline. Operations-related activities under Alternative 2 would result in **less-than-significant and potentially beneficial** impacts to rainbow trout in the YRDP reaches upstream of Englebright Dam relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt2-4: Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam.

- Overall, less suitable habitat conditions for hardhead in a portion of the NBBD Reach of the North Yuba River, where hardhead have not been documented. Although habitat availability would be improved (including about 11-24% more adult habitat and about 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As described above under the Proposed Projects analysis, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) and adopted by FERC and USACE (2019) targeting the provision of suitable rainbow trout physical habitat and water temperatures in the North Yuba River downstream of NBBD, and providing thermal benefits for rainbow trout in the upper Yuba River downstream of the North Yuba River. Because hardhead were not observed in the North Yuba River downstream of NBBD during YRDP Relicensing studies, and because suitable water temperatures for hardhead spawning primarily occur downstream of the North Yuba River under existing conditions, it is uncertain whether less suitable thermal habitat conditions for adults and juveniles during summer and early fall would directly impact hardhead in this reach.

- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable habitat availability for adults during summer (about 12% more habitat) and improved thermal suitability for spawning (water temperatures occurring within the 59-64°F range 10% more often) upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate (although water temperatures outside of the hardhead preference range would persist under Alternative 2 and the Future Baseline for adults and juveniles during spring through fall).

Overall, habitat conditions would be less suitable for hardhead in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with slightly more suitable habitat conditions in the 7.5-mile long upper Yuba River due to improved conditions for adult habitat availability and spawning thermal suitability upstream of Colgate (5.8-mile reach) and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). As described above, based on hardhead life history (including upstream spawning migrations, downstream movement of adults and juveniles subsequent to spawning, and the

preference for warm water temperatures) and the generally non-preferred thermal conditions for hardhead spawning in the North Yuba River under existing conditions, hardhead spawning and subsequent rearing is most likely to occur in the upper Yuba River. As described above, hardhead juveniles and adults are present in Englebright Reservoir. Because Englebright Reservoir conditions (e.g., water surface elevations) would not substantially change under Alternative 2 relative to the Future Baseline, Englebright Reservoir would continue to serve as a refuge for hardhead.

In addition to the slightly more suitable habitat conditions for hardhead in the upper Yuba River, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass (which reportedly prefer summer water temperatures of about 20-27°C (68-81°F) (Moyle 2002). For example, smallmouth bass was found to be one of the most abundant fish species in the upper Yuba River, comprising about 77% of fishes observed in surveys during 2013 near RM 39.6 (immediately downstream of the North Yuba River/Middle Yuba River confluence) and comprising 93-98% of the fish observed during both 2012 and 2013 at RM 35 (upstream of Colgate) (Yuba Water 2017). However, in contrast to the reach upstream of Colgate, smallmouth bass were not observed downstream of Colgate (where water temperatures are much colder) during the snorkel surveys, and only 1 smallmouth bass was captured incidentally during electrofishing surveys (Yuba Water 2017). The introduction of black bass has been identified as one of the key factors in hardhead population declines in the Central Valley (Moyle 2002; Brown and Moyle 1993), including in the South Yuba River (Moyle et al. 1995). Gard (2004, as cited in Cocherell et al. 2014) found that smallmouth bass limited the abundance of hardhead prey (native cyprinids) in the South Yuba River. Because water temperatures during the summer in the upper Yuba River below the North Yuba River/Middle Yuba River confluence would occur within the 68-81°F smallmouth bass preference range about only 10% of the time relative to about 80% of the time under the Future Baseline, the upper Yuba River may become less preferred by smallmouth bass, which could indirectly benefit hardhead utilization and survival in this reach.

CEQA Conclusion

YRDP operations-related activities would not substantially disturb or otherwise adversely impact hardhead or hardhead, their habitat, or migratory behaviors when compared to the Future Baseline. Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for hardhead in the longer 7.5-mile long upper Yuba River would be slightly more suitable. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit hardhead utilization and survival in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for hardhead colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for hardhead when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under Alternative 2 would result in **less-than-significant** impacts to hardhead in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt2-5: Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento pikeminnow was evaluated in the YRDP reaches upstream of Englebright Dam including the North Yuba River below NBBD and the upper Yuba River. Based on species and lifestage-specific flow-dependent habitat availability and thermal suitability by river and reach (see Appendix 9C), YRDP operations-related activities would result in the following habitat conditions under Alternative 2 relative to the Future Baseline.

- Overall, less suitable conditions for Sacramento pikeminnow in a portion of the NBBD Reach of the North Yuba River. Although habitat availability would be improved (including about 11-24% more adult habitat and about 7-12% more juvenile habitat during summer and fall), less preferable (cooler) water temperatures for adults and juveniles would occur during summer and early fall (about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.
- Similar conditions for pikeminnow in the upper Yuba River due to more suitable physical habitat availability conditions upstream of Colgate for adults during summer (about 12% more habitat), less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within the preferred range nearly 80% of the time during summer), and similar conditions for all lifestages downstream of Colgate.

Overall, habitat conditions would be less suitable for Sacramento pikeminnow in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River due to substantially less preferable thermal habitat conditions, with similar habitat conditions in the 7.5-mile long upper Yuba River due to generally similar conditions for adults and juveniles but improved adult physical habitat availability upstream of Colgate (5.8-mile reach), and similar habitat conditions for all lifestages downstream of Colgate (1.7-mile reach). Although conditions would be less preferable in the lower portion of the North Yuba River, suitable conditions for Sacramento pikeminnow would still persist in the larger upper Yuba River. As described above for hardhead, the reduction in water temperatures in the upper Yuba River may create less suitable habitat conditions for smallmouth bass, which could indirectly benefit Sacramento pikeminnow in this reach.

CEQA Conclusion

Although operations-related activities would result in substantially less preferred thermal habitat conditions in the lower portion of the 2.3-mile NBBD reach, habitat conditions for Sacramento pikeminnow in the longer 7.5-mile long upper Yuba River would be similar. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit Sacramento pikeminnow in this reach. Therefore, although the length of thermally preferred habitat could be

somewhat constrained for Sacramento pikeminnow colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for Sacramento pikeminnow when water temperatures are less preferred during the summer and early fall in the North Yuba River. Consequently, operations-related activities under Alternative 2 would result in **less-than-significant** impacts to Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam (North Yuba River, upper Yuba River) relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt2-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.

As described in Section 9.4.2.2.1, Sacramento sucker was evaluated in the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD, and the upper Yuba River. Based on species and lifestage-specific flow-dependent habitat availability and thermal suitability by river and reach (see Appendix 9C), YRDP operations-related activities would result in the following habitat conditions under Alternative 2 relative to the Future Baseline.

- Overall, less suitable conditions for Sacramento sucker in a portion of the NBBD Reach of the North Yuba River. Although physical habitat availability would be improved for juveniles (10-12% more habitat during summer and fall) and adults (10-20% more habitat during summer and fall), less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall (about 95% less often during summer and about 20% less often during fall) in the North Yuba River above the confluence with the Middle Yuba River. As discussed under hardhead above, this reduction in water temperature results from minimum instream flows during June through September recommended by the resource agencies (CDFW, USFWS, USFS, BLM) targeting improved conditions for rainbow trout in the upper Yuba River.
- Similar conditions for Sacramento sucker in Oregon Creek due to overall generally similar habitat availability and water temperature conditions across the three locations evaluated.
- Slightly less suitable conditions for Sacramento sucker in the Middle Yuba River due to similar or less suitable adult habitat conditions and substantial reductions (11-35%) in juvenile habitat availability during winter, spring and summer at all three locations evaluated. Water temperature conditions are generally similar for adults and juveniles in the Middle Yuba River.
- Less suitable conditions for Sacramento sucker in the upper Yuba River due to: (1) similar adult habitat availability conditions except for substantially (22%) reduced habitat during the spring (when spawning occurs) upstream of Colgate; (2) less suitable juvenile habitat conditions upstream of Colgate due to consistently substantial (11-24%) reductions in physical habitat availability during all seasons; (3) less preferable (cooler) water temperatures for adults and juveniles during summer and fall upstream of Colgate (water temperatures occur within the 61-77°F preference range with similar frequencies during spring, and although water temperatures occur within the preference range about 15% less often during summer and fall, water temperatures are still within

the preferred range nearly 80% of the time during summer); and (4) generally similar conditions for adults and juveniles downstream of Colgate.

Overall, habitat conditions for Sacramento sucker would be less suitable in the YRDP reaches upstream of Englebright Dam. Although conditions would be similar in Oregon Creek, conditions would be less preferable in the lower portion of the North Yuba River, and less suitable in the upper Yuba River and Middle Yuba River.

CEQA Conclusion

YRDP operations-related activities in the YRDP reaches upstream of Englebright Dam (i.e., in the North Yuba River below NBBD, Oregon Creek below LCDD, Middle Yuba River below OHDD, and upper Yuba River) would substantially disturb or otherwise adversely impact Sacramento sucker, their habitat, or migratory behaviors when compared to the Future Baseline. Operations-related activities under Alternative 2 would result in **significant and unavoidable** impacts to Sacramento sucker in the YRDP reaches upstream of Englebright Dam relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

Lower Yuba River

Flow and water temperature model results were examined for the lower Yuba River downstream of Englebright Dam at Smartsville, Parks Bar, DPD, and Marysville to evaluate potential impacts to target fish species and lifestages that could occur under Alternative 2 relative to the Future Baseline. Potential impacts are summarized below by species and lifestage for the relevant locations. Detailed analyses of modeled flow and water temperature results are provided by species and lifestage in Section 1.6.2 of Appendix 9C (pages 9C-141 through 9C-163). Simulated fisheries flow-dependent habitat availability outputs and water temperature exceedance probabilities for the lower Yuba River under the Alternative 2 scenario relative to the Future Baseline scenario are shown in Figures C6-1 through C6-115 and Tables C6-1 through C6-19 in Appendix 9E.

As described in Appendix 4B (see Tables C6-Flow-1 through C6-Flow-4 in Appendix 4C), monthly average flows in the lower Yuba River under Alternative 2 relative to the Future Baseline are generally higher at most locations during November through June, particularly during April and May (by about 15-25%), and are substantially lower (by about 10-20%) during July through September over the entire simulation period. Average monthly flows by WYT exhibit similar trends with substantially higher (by about 10-70%) flows during December through May, particularly during Below Normal, Dry and Critical WYs (especially during March through May of Dry and Critical WYs), and substantially lower (by about 10-30%) flows during July through September of most WYTs.

Monthly average water temperatures in the lower Yuba River (see Tables C6-Temp-1 through C6-Temp-5 in Appendix 4C) are similar or slightly cooler (typically by less than 1°F) during November through April, and warmer during May through October (with increases of up to 2-3°F during July and August) at most locations over the entire simulation period. Water temperatures by WYT exhibit similar trends but become progressively warmer from wetter to drier WYTs during June through September. The greatest water temperature reductions (1-3°F) occur during

March-May of drier WYs in the lowermost reaches, and the greatest increases (2-5°F) in water temperature occur during June through September of Below Normal, Dry and Critical WYs throughout the lower Yuba River.

YRDP Impact FISH-FAlt2-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River.

Relative to the Future Baseline scenario, the Alternative 2 scenario would be expected to result in:

- Overall, similar amounts of flow-dependent physical habitat for the spring-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages, with: (1) lower amounts of juvenile rearing habitat (about 8-9% less) during the spring months in Dry and Critical WYs due to increased springtime flows which, relative to the Future Baseline, exceed habitat suitability criteria; and (2) higher amounts of juvenile rearing habitat (5-10% more) during the summer months in Below Normal, Dry and Critical WYTs due to decreased July and August flows resulting in more conformance with habitat suitability criteria relative to the Future Baseline .
- Less suitable conditions for spring-run Chinook salmon adult immigration and holding (April through September) due to increased (some substantial increases based on lifestage, season, and location) probabilities of exceeding adult immigration and holding WTI values at Smartsville, DPD, and Marysville during summer and early fall. For example, the adult holding WTI values are exceeded 15-26% more often during the summer at DPD, which is a critical over-summer holding area for adult spring-run Chinook salmon.
- Substantially less suitable conditions for spring-run Chinook salmon spawning (September through mid-October) and embryo incubation (September through December) due to substantially increased probabilities of exceeding spawning and embryo incubation WTI values at Smartsville and Parks Bar during September through mid-October, including a 21-27% higher frequency of exceedance of the upper tolerable WTI value at both locations.
    - Over the entire evaluation period, Alternative 2 relative to the Future Baseline provides about 1.0 to 2.0 fewer miles of optimal (≤ 56°F) spawning habitat during most of the September through October period. Alternative 2 provides about 3.0 fewer miles of tolerable (≤ 58°F) spawning habitat during September and about 0.5 to 3.0 fewer miles of ≤ 58°F habitat during most of October.
    - During Dry and Critical WYs when the longitudinal extent of thermally suitable habitat is most limited, Alternative 2 provides about 0.5 to 1.0 fewer miles of ≤ 56°F spawning habitat during September into mid-October and about 2.0 to 4.0 fewer miles during the last 2 weeks of October. Alternative 2 provides about 3.0 to 4.0 fewer miles of ≤ 58°F spawning habitat during September through the mid-October and about 0.5 to 3.0 fewer miles during the second half of October.
- Less suitable conditions for spring-run Chinook salmon juvenile rearing (year-round but primarily mid-November through June) due to increased (substantially in some

cases) probabilities of exceeding the juvenile rearing WTI values at Smartsville during the summer and at DPD during the summer and fall. For example, water temperatures exceed the WTI values with 13-19% higher frequency during the summer at DPD.

- Similar conditions for spring-run Chinook salmon juvenile downstream movement (November through June) and smoltification (November through June) due to generally similar probabilities of exceeding the downstream movement and salmon smoltification WTI values, but with slightly increased (5-7%) probabilities of exceeding the juvenile downstream movement UT WTI and the salmon smoltification WTI values at DPD during summer (June).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for spring-run Chinook salmon are expected to be substantially less suitable under Alternative 2 relative to the Future Baseline primarily due to substantially decreased water temperature suitabilities for the adult immigration, adult holding, spawning and embryo incubation, and juvenile rearing lifestages during the summer and fall. Particularly adverse water temperature impacts would occur under Alternative 2 by providing essentially no thermally optimal habitat in the spring-run Chinook salmon spawning reaches during the entire month of September (of the September through mid-October spring-run Chinook salmon spawning period) of Dry and Critical WYs. Alternative 2 also severely restricts the amount of even thermally tolerable spawning water temperatures, by providing only 1-2 miles of thermally tolerable habitat (up to 4 miles less than the Future Baseline) during the September portion of the September through mid-October spawning season of Dry and Critical WYs.

CEQA Conclusion

As described above, YRDP operations-related activities would be expected to substantially disturb or otherwise adversely impact spring-run Chinook salmon, their habitat, and migratory behaviors in the lower Yuba River. YRDP operations would result in substantially less suitable conditions for spring-run Chinook salmon in the lower Yuba River primarily due to substantially decreased water temperature suitabilities for adult holding, spawning and embryo incubation, and juvenile rearing lifestages during summer and fall, particularly during the spawning and embryo incubation season. Alternative 2 would provide essentially no thermally optimal spring-run Chinook salmon spawning habitat, and severely restricted amounts of even thermally tolerable habitat (only 1-2 miles - up to 4 miles less than the Future Baseline) during the entire month of September (of the September through mid-October spring-run Chinook salmon spawning period) of Dry and Critical WYs. Consequently, YRDP operations under Alternative 2 would result in **significant and unavoidable** impacts to spring-run Chinook salmon in the lower Yuba River relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

YRDP Impact FISH-FAlt2-8: Operations-related impacts on fall-run Chinook salmon in the lower Yuba River.

Relative to the Future Baseline scenario, the Alternative 2 scenario would be expected to result in:

- Similar or slightly reduced levels of flow-dependent habitat availability for the fall-run Chinook salmon spawning, fry rearing, and juvenile rearing lifestages.

- Overall, slightly less suitable conditions for fall-run Chinook salmon adult immigration and staging (July through November) conditions. Although water temperature conditions would be less suitable during the summer (due to increased or substantially increased probabilities of exceeding the adult immigration and staging WTI values at DPD during the summer (8-18%) and at Marysville during the summer (18-24%), most adult fall-run Chinook salmon are believed to enter their natal streams shortly before spawning and relatively quickly migrate upstream to their spawning grounds during the fall (RMT 2013). Adult fall-run Chinook salmon immigration is typically recognized to peak during October and November (Vogel and Marine 1991; Reclamation 2008; RMT 2013), when water temperature suitabilities are similar at DPD.
- Overall, slightly less suitable conditions for fall-run Chinook salmon spawning (October through December) and embryo incubation (October through March) due to generally similar water temperatures at Smartsville and DPD during the fall (October and November), but with an increased (8%) probability of exceeding the spawning and incubation UO WTI at Smartsville during October and November, and about 0.5 to 4.0 fewer miles of optimal (≤ 56°F) and tolerable (≤ 58°F) spawning habitat during October (of the October through December spawning period with peak spawning expected to occur during November) of Dry and Critical WYs.
- Similar conditions for fall-run Chinook salmon juvenile rearing and downstream movement (mid-December through June) due to similar probabilities of exceeding the juvenile rearing and downstream movement WTI values at Smartsville, DPD, and Marysville during winter and spring (when the vast majority of juvenile fall-run Chinook salmon would be expected to be rearing or moving downstream), but with an increased probability (7%) of exceeding the juvenile rearing and downstream movement UT WTI value at DPD during June (when a small proportion of juvenile fall-run Chinook salmon would be expected to remain in the lower Yuba River).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations (including peak adult immigration occurring during October and November, and only an initial portion of spawning occurring during October), habitat conditions for fall-run Chinook salmon are expected to be slightly less suitable under Alternative 2 relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities would not substantially disturb or otherwise adversely impact fall-run Chinook salmon, their habitat, or migratory behaviors in the lower Yuba River. Although YRDP operations would result in slightly less suitable conditions for fall-run Chinook salmon in the lower Yuba River due to reduced water temperature suitabilities for adult immigration and staging during the summer and for spawning during October, YRDP operations would result in similar habitat availabilities and generally similar water temperature suitabilities for all other lifestage periods. Overall, YRDP operations under Alternative 2 would result in **less-than-significant** impacts to fall-run Chinook salmon in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt2-9: Operations-related impacts on steelhead in the lower Yuba River.

Relative to the Future Baseline, the Alternative 2 would be expected to result in:

- Similar amounts of flow-dependent physical habitat for steelhead spawning over the entire simulation period (but 7-8% lower amounts in Dry and Critical WYTs). Similar amounts of fry rearing and juvenile rearing habitat over the entire simulation period(with lower amounts of juvenile rearing habitat (9-10%) during spring in Dry and Critical WYs, and higher amounts (7-10%) during summer in Below Normal and Critical WYs).
- Slightly less suitable conditions for steelhead adult immigration and holding over the entire lifestage periodicity extending from September through March due to similar probabilities of exceeding the adult immigration and holding WTI values during winter and spring, but with substantially increased probabilities of exceeding the adult immigration UO WTI value at Marysville (11% more often) and the holding UO WTI value at DPD (13% more often) during October and November. Adult steelhead migrate into the lower Yuba River year-round with most (nearly 70%) of the annual run moving upstream during December-February. A relatively small proportion of the annual run has been observed moving upstream during October (8%) and November (5%).
- Generally similar conditions for steelhead spawning (January through April) and embryo incubation (January through May) due to similar probabilities of exceeding the spawning and embryo incubation WTI values at Smartsville and Parks Bar during winter and spring but with a slightly decreased (by 6%) probability of exceeding the UO WTI at Parks Bar during the spring. Increased probabilities of exceeding the WTI values at Smartsville (5-9% more often) and the UT WTI value at Parks Bar (6% more often) would occur during May.
- Similar conditions for steelhead juvenile rearing (year-round) due to similar probabilities of exceeding the juvenile rearing WTI values during most seasons, but with a slightly increased (by 6%) probability of exceeding the juvenile rearing UO WTI value during summer at Parks Bar.
- Less suitable conditions for steelhead juvenile downstream movement (year-round but primarily February through July) due to similar probabilities of exceeding the juvenile downstream movement WTI values during winter and spring at DPD and Marysville, but with increased or substantially increased probabilities of exceeding the WTI values during June and July at DPD (6-11% more often) and Marysville (12-13% more often).
- Similar conditions for steelhead smoltification (November through April) due to generally similar probabilities of exceeding the steelhead smoltification WTI values during fall, winter, and spring at Smartsville and Parks Bar, but with a slightly decreased (by 6%) probability of exceeding the UO WTI value at Parks Bar during the spring.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for steelhead are expected to be slightly less suitable under Alternative 2 relative to the Future Baseline.

CEQA Conclusion

As described above, YRDP operations-related activities in the lower Yuba River would not substantially disturb or otherwise adversely impact steelhead, their habitat, or migratory behaviors. Although YRDP operations would result in slightly less suitable conditions for steelhead in the lower Yuba River due to less suitable thermal conditions for adult immigration & holding and juvenile downstream movement, operations would result in similar habitat availabilities and generally similar water temperature suitabilities for all other lifestage periods. Consequently, YRDP operations under Alternative 2 would result in **less-than-significant** impacts to steelhead in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt2-10: Operations-related impacts on green sturgeon in the lower Yuba River.

Relative to the Future Baseline, Alternative 2 would be expected to result in:

- Higher levels of flow-dependent physical habitat for green sturgeon adult holding overall and particularly during Below Normal and drier WYTs (19-28% more habitat) due to increased flows during late spring and early summer, and higher levels of flow-dependent physical habitat for green sturgeon spawning overall and particularly during Dry and Critical WYTs (61-143% more habitat) due to increased flows during June.
- Similar conditions for green sturgeon adult immigration and holding (April through June) due to similar probabilities of exceeding the green sturgeon adult immigration and holding WTI value at DPD during spring and early summer.
- Less suitable conditions for green sturgeon spawning and embryo incubation (June and July) due to a substantially increased (14% more often) probability of exceeding the green sturgeon spawning and embryo incubation WTI value at DPD during June and July.
- Substantially less suitable conditions for green sturgeon adult post-spawn holding (June through mid-February) due to substantially increased (9-19% more often) probabilities of exceeding the green sturgeon adult post-spawn holding WTI value during summer and fall at DPD and Marysville.
- Less suitable conditions for green sturgeon juvenile rearing and emigration (July through January) due to substantially increased probabilities of exceeding the green sturgeon juvenile rearing and emigration WTI value during summer at DPD (10% more often) and at Marysville (17% more often).

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for green sturgeon are expected to be less suitable under Alternative 2 relative to the Future Baseline due to decreased (or substantially decreased) water temperature suitabilities for the spawning, embryo incubation, adult

post-spawn holding, and juvenile rearing and emigration lifestages, despite higher levels of flow-dependent physical habitat being provided for the adult holding and spawning lifestages.

CEQA Conclusion

As described above, YRDP operations-related activities would substantially disturb or otherwise adversely impact green sturgeon, their habitat, and migratory behaviors in the lower Yuba River. YRDP operations would result in less suitable conditions for green sturgeon in the lower Yuba River due to decreased or substantially decreased water temperature suitabilities for most lifestages. Consequently, YRDP operations under Alternative 2 would result in **significant and unavoidable** impacts to green sturgeon in the lower Yuba River relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

YRDP Impact FISH-FAlt2-11: Operations-related impacts on lamprey in the lower Yuba River.

Relative to the Future Baseline, Alternative 2 would be expected to result in:

- Similar or slightly lower levels of flow-dependent physical habitat for the lamprey spawning lifestage overall (but 11% lower average amount in Dry WYs due to increased flows during late spring and early summer), and essentially equivalent levels of flow-dependent physical habitat for the lamprey ammocoete rearing lifestage.
- Similar conditions for lamprey adult immigration (March through June) due to similar probabilities of exceeding the lamprey adult immigration WTI value during spring and summer.
- Less suitable conditions for lamprey spawning (March through July) and incubation (March through August) due to a substantially increased probability (15% more often) of exceeding the lamprey spawning and incubation WTI value during summer at DPD.
- Similar conditions for lamprey ammocoete rearing (year-round but primarily during December through February) due to generally similar probabilities of exceeding the lamprey ammocoete rearing WTI value during all seasons at DPD and most seasons at Marysville, but with a slightly increased probability (7% more often) of exceeding the WTI value at Marysville during the summer.

Overall, in consideration of all flow and water temperature-related impact indicators, as well as peak lifestage-specific temporal considerations, habitat conditions for lamprey are expected to be less suitable under Alternative 2 relative to the Future Baseline due to decreased levels of flow-dependent physical habitat and decreased water temperature suitabilities for lamprey spawning.

CEQA Conclusion

As described above, YRDP operations-related activities could substantially disturb or otherwise adversely impact lamprey, their habitat, and migratory behaviors in the lower Yuba River. YRDP operations would result in less suitable conditions for lamprey in the lower Yuba River due to decreased suitabilities for both habitat availability and water temperature for the spawning lifestage. Consequently, YRDP operations under Alternative 2 would result in **significant and**

unavoidable impacts to lamprey in the lower Yuba River relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

YRDP Impact FISH-FAlt2-12: Operations-related impacts on white sturgeon in the lower Yuba River.

There are very limited anecdotal observations of the presence of white sturgeon in the lower Yuba River. Nonetheless, because there is the potential for adult white sturgeon to occur in the lower Yuba River below DPD, review of monthly water temperature exceedance distributions at Marysville indicate slightly higher exceedance of the 77°F adult immigration and holding WTI value during the warmest months of the year (i.e., June through September) under Alternative 2 (exceedance of 5% or less) relative to the Future Baseline (exceedance of 2% or less).

CEQA Conclusion

YRDP operations-related activities would not substantially disturb or otherwise adversely impact white sturgeon, their habitat, or migratory behaviors in the lower Yuba River when compared to the Future Baseline. YRDP operations would result in similar conditions for white sturgeon in the lower Yuba River due to similar water temperature suitabilities for adults that may potentially occur downstream of DPD. Consequently, YRDP operations under Alternative 2 would result in **less-than-significant** impacts to white sturgeon, their habitat, and migratory conditions in the lower Yuba River relative to the Future Baseline and no mitigation is required.

YRDP Impact FISH-FAlt2-13: Operations-related impacts on other fish species in the lower Yuba River.

Based on the changes to flows and thermal conditions described above, and because the thermal tolerances of hardhead, Central California roach, striped bass, and American shad are typically broader than those identified for anadromous salmonids, YRDP operations-related impacts to hardhead, Central California roach, striped bass, and American shad, their habitats, or migratory conditions are expected to be minimal.

CEQA Conclusion

Consequently, YRDP operations under Alternative 2 would result in **less-than-significant** impacts to these fish species and their habitat in the lower Yuba River relative to the Future Baseline and no mitigation is required.

9.5.3.2.3 Additional Operations-Related Impacts

YRDP Reaches and Reservoirs Upstream of Englebright Dam

Reservoirs

YRDP Impact FISH-FAlt2-14: Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir.

Based on the monthly frequency of 6-foot or greater reductions in modeled NBBR water surface elevations during March through June over the period of simulation, Alternative 2 would result in substantially higher (71%) month-to-month frequency of 6-foot or greater reductions relative to the Future Baseline[21]. Consequently, relative to the Future Baseline, Alternative 2 would result in less suitable conditions for warmwater fish in NBBR.

CEQA Conclusion

As described above, habitat conditions for warmwater fisheries in NBBR would be less suitable due to an increased frequency of substantial reductions in NBBR water surface elevations during March through June. Consequently, operations-related activities under Alternative 2 would result in **significant and unavoidable** impacts to warmwater fisheries in NBBR relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

YRDP Impact FISH-FAlt2-15: Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir.

Based on modeled NBBR storage volumes summarized in Table C6-Reservoir-1 in Appendix 4C, Alternative 2 also would be expected to result in an increased frequency of reductions in average monthly storage of sufficient magnitude or duration to result in reductions to coldwater pool volume during the months of April through November over the entire period of simulation and in each WYT, relative to the Future Baseline[22]. Relative to the Future Baseline, Alternative 2 would result in substantial (up to about 22%) reductions in NBBR storage during the months of June and July during Below Normal and drier WYTs, when reservoir storage is already low relative to wetter WYTs. Consequently, relative to the Future Baseline, Alternative 2 would be expected to provide less suitable conditions for coldwater fish in NBBR.

CEQA Conclusion

As described above, habitat conditions for coldwater fisheries in NBBR would be less suitable due to substantial reductions in NBBR storage during April through November. Consequently, operations-related activities under Alternative 2 would result in **significant and unavoidable**

[21] For informational purposes, relative to the Existing Condition, Alternative 2 would result in a substantially higher (61%) month-to-month frequency of 6-foot or greater reductions in water surface elevations in NBBR during the March through June warmwater fish spawning period.

[22] For informational purposes, relative to the Existing Condition, Alternative 2 would result in substantial (up to about 20%) reductions in NBBR storage during the months of June and July during Below Normal and drier WYTs, when reservoir storage is already low relative to wetter WYTs.

impacts to coldwater fisheries in NBBR relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

YRDP Impact FISH-FAlt2-16: Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries.

As described above for warmwater fish in NBBR, Alternative 2 would be expected to result in substantial reductions in NBBR water surface elevations during the March through June timeframe relative to the Future Baseline (and Existing Condition). Consequently, relative to baseline conditions, Alternative 2 would be expected to provide less suitable conditions for fish access to NBBR tributaries.

CEQA Conclusion

As described above, the ability of reservoir fish to access tributaries to NBBR would be reduced due to substantial reductions in NBBR water surface elevations during March through June. Consequently, operations-related activities under Alternative 2 would result in **significant and unavoidable** impacts to fish access to NBBR tributaries relative to the Future Baseline and no feasible mitigation has been identified because this impact results from operating to the 55% UIF component of Alternative 2.

YRDP Impacts FISH-Alt2-17 and FISH-FAlt2-17: Other operations-related impacts on YRDP reservoir fisheries in areas upstream of Englebright Dam.

Entrainment

New Colgate Power Tunnel

Similar to the Proposed Projects and Alternative 1, Alternative 2 would also include use of the upper New Colgate Power Tunnel intake during March through May. Although Alternative 2 would result in substantial reductions in NBBR water surface elevations in most months over the entire simulation period and during most WYTs (see Tables C5-Reservoir-2 and C6-Reservoir-2 in Appendix 4C), the low abundance (or complete lack) of fish captures at all depths during Yuba Water's relicensing study gillnet sampling near NBBD in 2012 (Yuba Water 2017) suggests that these substantial reductions in NBBR water surface elevation would not result in an increase in fish entrainment into the New Colgate Power Tunnel under Alternative 2 relative to the bases of comparison.

Narrows 2 Power Tunnel Intake and Narrows Tunnel via USACE's Englebright Intake

Because Alternative 2 would not result in substantial changes in YRDP or Narrows Project operations at Narrows 2 and Narrows powerhouses, or in substantial changes in Englebright Reservoir water surface elevations (see Tables C5-Reservoir-4 and C6-Reservoir-4 in Appendix 4C), the analysis of impacts to fish in Englebright Reservoir presented for the Proposed Projects in Section 9.5.1.2.3 (above) would be unchanged and would apply to Alternative 2.

CEQA Conclusion

Other YRDP operations-related effects to reservoir fisheries upstream of Englebright Dam under Alternative 2 relative to the Existing Condition and Future Baseline would be minimal due to: (1) similar levels of NBBR fish entrainment into the New Colgate Power Tunnel based on similar NBBR WSEs; and (2) similar levels of Englebright Reservoir fish entrainment into the Narrows 2 Power Tunnel and Narrows Tunnel due to similar Englebright Reservoir WSEs. Consequently, other YRDP operations-related activities under Alternative 2 would result in **less-than-significant** impacts to reservoir fisheries resources in areas upstream of Englebright Dam relative to the Existing Condition and Future Baseline, and no mitigation is required.

YRDP Impacts FISH-Alt2-18 and FISH-FAlt2-18: Other operations-related impacts on fisheries resources in reaches upstream of Englebright Dam.

Effects Related to Diversion Dams

Because Alternative 2 would not result in any changed YRDP operations at Our House and Log Cabin diversion dams (or at the Lohman Ridge and Camptonville tunnels) relative to the Proposed Projects, the effects to fish and aquatic habitat related to operations at the diversion dams under Alternative 2 would be the same as those identified in Section 9.5.1.2.3 above for the Proposed Projects.

Effects Related to License Conditions/Implementation Plans

Because Alternative 2 would not result in any additional or changed conditions or implementation plans under the new FERC license for the YRDP or Narrows Project, the effects to fish and aquatic habitat in areas upstream of Englebright Dam related to YRDP and Narrows Project license conditions/implementation plans under Alternative 2 would be the same as those identified in Section 9.5.1.2.3 above for the Proposed Projects.

CEQA Conclusion

As described above, other YRDP operations-related effects to riverine fisheries resources upstream of Englebright Dam under Alternative 2 relative to the Existing Condition and Future Baseline would result in: (1) similar or slightly improved fisheries habitat conditions in the North Yuba River below NBBD associated with potential fish stranding due to more gradual flow reductions between May and July subsequent to some (relatively infrequent) spill events at NBBD during some Wet and Above Normal WYs; (2) similar fish passage conditions at OHDD and LCDD; (3) similar or reduced levels of fish entrainment from the Middle Yuba River and Oregon Creek into the Lohman Ridge and Camptonville tunnels; (4) similar fisheries habitat conditions related to fish stranding in Oregon Creek but with some reductions in potential stranding occurring during some Wet years; (5) more suitable fisheries habitat conditions related to potential fish stranding in the Middle Yuba River during most Wet and Above Normal WYs and during some drier WYTs; (6) similar or improved fisheries physical habitat conditions in Oregon Creek and the Middle Yuba River associated with implementation of sediment and woody material management conditions; and (7) although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency

coordination. Overall, due to implementation of the new YRDP license and associated conditions, other YRDP operations-related activities under Alternative 2 would result in **less-than-significant and potentially beneficial** impacts to fisheries resources in YRDP reaches upstream of Englebright Dam relative to the Existing Condition and Future Baseline, and no mitigation is required.

Narrows Impacts FISH-Alt2-3 and FISH-FAlt2-3: Operations-related impacts in areas upstream of Englebright Dam.

As described above in Section 9.4.2.3, Narrows Project operations-related effects to fisheries resources upstream of Englebright Dam would be minimal when compared to the Existing Condition or Future Baseline due to the minimal potential for adverse impacts due to Narrows Project license conditions associated with fish stocking in Englebright Reservoir and water surface elevations in Englebright Reservoir.

CEQA Conclusion

Consequently, Narrows Project operations-related activities would result in **less-than-significant** impacts to fisheries resources (either directly, through habitat modification, or to migratory conditions) in areas upstream of Englebright Dam relative to both the Existing Condition and Future Baseline and no mitigation is required.

Lower Yuba River

YRDP Impacts FISH-Alt2-19 and FISH-FAlt2-19: Other operations-related impacts on fisheries resources in the lower Yuba River.

Chinook Salmon and Steelhead Redd Scouring

To determine whether Alternative 2 has the potential to result in changes in the frequency of flows that could result in anadromous salmonid redd scouring, flow model results were examined for the lower Yuba River below Deer Creek and at Marysville to evaluate whether Alternative 2 would result a change in the frequency (expressed as percent of days) of flows above bankfull (5,000 cfs) and/or floodway (21,100 cfs) levels. Model results indicate that, relative to the Existing Condition and Future Baseline scenarios, Alternative 2 would result in a substantial (i.e., greater than 10%) increase in the number of days over bankfull flows, but a substantial (i.e., greater than 10%) decrease in the number of days over floodway flows. Flows would exceed the bankfull flow 26% and 14% more often below Deer Creek and at Marysville, respectively, under Alternative 2 relative to the Existing Condition, and would exceed bankfull flow 25% and 14% more often below Deer Creek and at Marysville under Alternative 2 relative to the Future Baseline. Flows would exceed the floodway flow 15% and 13% less often below Deer Creek and at Marysville, respectively, under Alternative 2 relative to the Existing Condition. Flows would exceed the floodway flow 16% and 14% less often below Deer Creek and at Marysville, respectively, under Alternative 2 relative to the Future Baseline.

Based on these results, Alternative 2 would result in an increased frequency of greater than bankfull flows, which could potentially contribute to increased rates of scour for anadromous salmonid redds in the lower Yuba River. However, Alternative 2 also would be expected to result

in a decreased frequency of greater than floodway flows, which potentially could contribute to decreased rates of scour for anadromous salmonid redds in the lower Yuba River during relatively high flows. Because Gervasi et al. (2021) found that total scour correlated best with hydrologic duration and volume above the floodway stage (which occurs 13-16% less often under Alternative 2), overall, Alternative 2 is not expected to substantially affect geomorphologic and substrate conditions in the lower Yuba River. As an indicator of potential impact to anadromous salmonid redd scour, these results suggest that anadromous salmonid redd scour would not be substantially affected under Alternative 2 relative to the Existing Condition and Future Baseline.

Effects Related to License Conditions/Implementation Plans

Because Alternative 2 would not result in any additional or changed conditions or implementation plans under the new FERC license for the YRDP or Narrows Project, the effects to fish and aquatic habitat in areas upstream of Englebright Dam related to YRDP and Narrows Project license conditions/implementation plans under Alternative 2 would be the same as those identified in Section 9.5.1.2.3 above for the Proposed Projects.

CEQA Conclusion

As described above, other YRDP operations-related effects to fisheries resources in the lower Yuba River would be minimal when compared to the Existing Condition or Future Baseline due to the limited potential for additional adverse impacts associated with: (1) Chinook salmon redd dewatering; (2) Chinook salmon and steelhead redd scouring; (3) juvenile stranding and isolation due to planned operations or unanticipated forced outages; and (4) implementation of YRDP license conditions/implementation plans. Although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency coordination. Consequently, other YRDP operations-related activities under Alternative 2 would result in **less-than-significant** impacts to fisheries resources (either directly, through habitat modification, or to migratory conditions) in the lower Yuba River relative to the Existing Condition and Future Baseline and no mitigation is required.

Narrows Impacts FISH-Alt2-4 and FISH-FAlt2-4: Operations-related impacts in the lower Yuba River.

Because Narrows Project operations would not be substantially changed relative to existing operations, there would be **less-than-significant impacts** to fisheries resources (either directly, through habitat modification, or to migratory conditions) in the lower Yuba River due to the Narrows Project operations-related activities under Alternative 2 relative to both the Existing Condition and Future Baseline.

Areas Downstream of the Lower Yuba River

YRDP Impact FISH-FAlt2-20: Operations-related impacts on special-status fish species in areas downstream of the lower Yuba River.

Increases in flows to the Delta (Delta inflow) during the spring months have been reported to potentially benefit various special-status and native fish species inhabiting or migrating through

the Delta, including juvenile Chinook salmon and steelhead, longfin smelt egg and larvae lifestages, delta smelt larvae, juvenile and pre-adult lifestages, starry flounder juveniles, bay shrimp larvae and juveniles, and other species (CDFG 2010).

The proportionate change in mean monthly monitored Feather River flows (at Boyd's Landing) due to changes in mean monthly modeled outflows from the lower Yuba River under Alternative 2 range from an increase of 1-8% during the months of November through June, a decrease of 2-3% during August and September, and essentially no change during July and October (see Table 8.5-6 in Chapter 8). The proportionate change in mean monthly monitored Sacramento River flows (at Verona) due to changes in mean monthly modeled outflows from the lower Yuba River under Alternative 2 range from an increase of 1-4% during the months of November through June, a decrease of 1% during August and September, and essentially no change during July and October (see Table 8.5-6 in Chapter 8).

Relative to the Future Baseline, Alternative 2 would result in warmer water temperatures of flows exiting the lower Yuba River (i.e., at the lower Yuba River above Feather River node) during June through August of Critical WYs and during July through September of all other WYTs, including substantially warmer (i.e., 3.0 – 4.6°F warmer) water temperatures during July and August of Below Normal, Dry and Critical WYs. Therefore, Alternative 2 could reduce thermal suitability for fisheries resources downstream of the lower Yuba River, including migration and rearing lifestages of fish species of primary management concern.

Most anadromous salmonid (and green and white sturgeon) spawning occurs upstream of the lower Yuba River confluence within the Feather River and upstream of the lower Feather River confluence within the Sacramento River. Because the Feather River downstream of the Yuba River and the Sacramento River downstream of the Feather River primarily serve as migratory corridors, the primary lifestages in these reaches considered in this DEIR include the adult and juvenile migratory (and transient rearing) lifestages for all runs of Chinook salmon, steelhead, and Pacific lamprey, and the migration and rearing lifestages of green sturgeon and white sturgeon, Sacramento splittail, American shad and striped bass. Based on the relatively low proportionate changes in Feather River and Sacramento River flows downstream of the Yuba River resulting from implementation of Alternative 2, flow-dependent migration and habitat conditions for adult or juvenile Chinook salmon, steelhead, green sturgeon, Pacific lamprey, and white sturgeon would not be expected to be substantially altered relative to the Future Baseline. Alternative 2 also would result in warmer water temperatures of flows exiting the lower Yuba River during the summer, particularly during July and August relative to the Future Baseline. However, no specific modeling was conducted to evaluate water temperature-related changes in the lower Feather River downstream of the lower Yuba River under Alternative 2. Based on monitored flows in the lower Yuba River and in the lower Feather River (at Boyd's Landing), flows from the lower Yuba River typically comprise approximately 15-30% of Feather River flows downstream of the lower Yuba River during the summer of recent drier WYs (2020-2021). Therefore, the relative warming of flows in the lower Feather River would likely be minimized due to the relatively low volumetric contribution of lower Yuba River flows to lower Feather River flows.

Luis and Pasternack (2023) collected continuous 30-minute water temperature monitoring data during late September of 2019 at multiple locations in the lower Yuba River near the confluence with the Feather River and at multiple locations in the lower Feather just upstream and downstream

of the lower Yuba River. These data show that water temperatures of flow exiting the lower Yuba River ranged from 16.5-17°C (61.7-62.6°F) and were about 1-1.5°C (1.8-2.7°F) warmer relative to water temperatures in the lower Feather River just upstream of the lower Yuba River. Over an approximate 1 km (0.6 mi) reach of the lower Feather River immediately downstream of the lower Yuba River, water temperatures of flows exiting the lower Yuba River equilibrated to approximately the water temperatures in the lower Feather River just upstream of the lower Yuba River, and water temperatures in the lower Feather River remained either similar or slightly increased (by up to about 0.9-1.8°F).

Moreover, because implementation of Alternative 2 by Yuba Water would likely mean that the Central Valley Project would be operated to 55% UIF in the Sacramento River and the State Water Project would be operated to 55% UIF in the Feather River, this would be expected to result in higher flows being released during the spring and lower flows being released during summer. Therefore, the proportionate changes in flows in the Feather and Sacramento Rivers due to implementation of Alternative 2 on the Yuba River would likely be even lower with implementation of 55% UIF on the Feather and Sacramento rivers. Furthermore, additional inflow into the Sacramento River and Delta from sources downstream of Verona (e.g., American River, eastside streams, Yolo Bypass) would further diminish the proportionate contribution of Yuba River outflow to total flow. Alternative 2 could result in some increases in water temperatures in the lower Feather River immediately downstream of the confluence with the lower Yuba River. However, based on the relative volumetric contribution of lower Yuba River flows to lower Feather River flows and the relatively similar or slightly increased lower Feather River water temperatures downstream of the lower Yuba River described above, thermal suitabilities for migratory and transient rearing lifestages of species of primary management concern in the lower Feather River (and downstream) would not be expected to be substantially affected relative to the Future Baseline. Overall, flow-dependent and water temperature-related conditions for migratory and transient rearing lifestages of evaluated fish species in the Feather River downstream of the lower Yuba River, Sacramento River downstream of Verona, and for all lifestages of Delta fish species, would not be expected to be substantially altered under Alternative 2 relative to the Future Baseline.

CEQA Conclusion

Consequently, implementation of Alternative 2 on the Yuba River would be expected to result in **less-than-significant** impacts to fish species in the Feather River downstream of the lower Yuba River, in the Sacramento River downstream of the Feather River, and in the Delta.

9.5.3.3 Consistency with HCPs/NCCPs

YRDP Impact FISH-FAlt2-21: YRDP consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.

Because there are no adopted HCPs, NCCPs, or other approved local, regional or state habitat conservation plans in the areas of the Yuba River Watershed potentially affected by the YRDP, the YRDP under Alternative 2 would not conflict with any relevant habitat conservation plans. Although there are adopted HCPs, NCCPs, or other approved local, regional or state habitat

conservation plans (e.g., Yolo County HCP/NCCP, Pacific Lamprey Regional Conservation Plan), based on the limited potential changes in flows (see Section 9.5.3.3.3 above) and limited associated potential affects to habitat conditions downstream of the lower Yuba River, the YRDP under Alternative 2 would not conflict with any adopted HCPs, NCCPs, or other approved local, regional or state habitat conservation plans under the Future Baseline. Therefore, this impact would be **less than significant**.

Narrows Impact FISH-FAlt2-5: Narrows Project consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans.

Because there are no adopted HCPs, NCCPs, or other approved local, regional or state habitat conservation plans in the areas of the Yuba River Watershed potentially affected by the YRDP, the YRDP under Alternative 2 would not conflict with any relevant habitat conservation plans. Although there are adopted HCPs, NCCPs, or other approved local, regional or state habitat conservation plans (e.g., Yolo County HCP/NCCP, Pacific Lamprey Regional Conservation Plan), based on the negligible potential to affect flows and habitat conditions downstream of the lower Yuba River, the Narrows Project under Alternative 2 would not conflict with any adopted HCPs, NCCPs, or other approved local, regional or state habitat conservation plans under the Future Baseline. Therefore, this impact would be **less than significant**.

9.5.4 No Project Alternative Analysis

Under the No Project Alternative relative to the Existing Condition, YRDP and Narrows operations would not significantly change. As described in Chapter 3, Yuba Water would continue to operate the YRDP and Narrows Project facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities (i.e., no electricity generation facilities) and for flood management purposes. No new environmental PM&E measures would be implemented. Hydrologic conditions in YRDP reaches and reservoirs upstream of Englebright Dam would be similar under the No Project Alternative relative to the Existing Condition except that there would be no peaking operations at the YRDP's Colgate Powerhouse, which would result in less fluctuations in the upper Yuba River below Colgate and in Englebright Reservoir. Potential changes in flow and water temperature associated with no peaking operations would be amortized in Englebright Reservoir and would not result in substantial changes downstream in the lower Yuba River. Therefore, simulated flows and water temperatures in the YRDP reaches and reservoirs upstream of Englebright Dam and in the lower Yuba River would be generally similar under the No Project Alternative relative to the Existing Condition. Overall, fisheries habitat conditions upstream of Englebright Dam and in the lower Yuba River would be expected to be similar to those under the Existing Condition. Therefore, because there would be no substantial changes in species-specific suitability in the YRDP reaches and reservoirs upstream of Englebright Dam or in the lower Yuba River, impacts to fisheries resources, including direct impacts and impacts to habitat and migratory conditions to all fish species of management concern in each stream evaluated, under the No Project Alternative relative to the Existing Condition would be **less than significant**.

9.6 Cumulative Impact Assessment

The fisheries cumulative impact assessment considers known past, present, and reasonably foreseeable future projects that may affect similar environmental resources as the Proposed Projects and Alternatives (see Table 4.9-1 in Chapter 4). Based on a review of the descriptions for each project and consideration of the potential for cumulative fisheries impacts with implementation of each project, the following projects are considered in the fisheries cumulative assessments.

- Yuba-Bear Hydroelectric Project (Yuba-Bear Project) FERC Project No. 2266 Relicensing, Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310) and the Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing (YB/DS projects)
- NBB Dam ARC Spillway Project (construction only)[23]
- Lower Yuba River Accord Water Transfer Program Extension
- Yuba River Resilience Initiative
- Healthy River and Landscapes (HR & L) Program[24]
- USACE NBB Dam and Reservoir Water Control Manual (WCM) Update
- 500-year Flood Protection Project
- Marysville Ring Levee
- Yuba River North Training Wall (NTW) Project
- Narrows 2 LWM Mitigation Plan
- USACE Authorized Operations and Maintenance of Existing Fish Passage Facilities at Daguerre Point Dam on the Lower Yuba River
- Hallwood Side Channel and Floodplain Restoration Project
- Timbuctoo Acquisition and Restoration Project
- Yuba River Canyon Salmon Habitat Restoration Project
- Upper Long Bar Habitat Restoration Project
- Lower Long Bar Restoration Project

[23] As described in Chapter 4, operations of the ARC Spillway is included in the YRDP Proposed Project.
[24] As described in Chapter 4, the HR&L Program is an assumed cumulative project under the Proposed Projects and Alternative 1 cumulative conditions, and is not assumed to occur under the Alternative 2 cumulative condition.

- Upper Rose Bar Habitat Restoration Project
- Hallwood/Cordua Canal – Fish Screen Return Line Replacement
- South Canal Diversion Water Supply and Fish Passage Enhancement Annual Maintenance Project
- Yuba City Boat Ramp Sediment Removal Project
- Various Water Supply Improvement Projects
- Oroville Facilities Hydroelectric Project FERC Relicensing (FERC Project No. 2100)
- South Feather Power Project FERC Relicensing (FERC Project No. 2088)
- Continued Long-term Operation of the CVP and the SWP
- CVP and SWP 1986 Coordinated Operations Agreement, including 2018 Addendum
- Long-term and Short-term Water Transfers
- Sites Reservoir Project
- Delta Conveyance Project
- Bay-Delta Water Quality Control Plan Update[25]

9.6.1 Cumulative Condition (with Proposed Projects) compared to the Existing Condition

As described in Chapter 4, the cumulative condition impact analyses are evaluated relative to the Existing Condition.

9.6.1.1 Cumulative Impacts on Fisheries Resulting from Construction Activities

Areas Upstream of Englebright Dam

Project facility construction activities under the Proposed Projects are limited to areas upstream of Englebright Dam and are only associated with the YRDP Relicensing Project. With implementation of the YRDP Relicensing Project impact avoidance and minimization measures and BMPs, construction-related effects on fisheries would be of small magnitude, geographically limited, and temporary in nature. In addition, the projects considered in the cumulative analysis that could result in construction-related impacts to fisheries are located in the lower Yuba River (described below), except for the ARC Spillway Project. Construction-related impacts of the ARC Spillway component of the YRDP have been fully analyzed under separate project-specific CEQA

[25] As described in Chapter 4, the Bay-Delta Water Quality Control Plan Update is an assumed cumulative project under Alternative 2 only.

compliance (Yuba Water 2024). Yuba Water's analysis of potential construction-related impacts on fisheries from the ARC Spillway Project were determined to be less than significant after implementation of impact avoidance/mitigation measures (Yuba Water 2024). Construction-related effects of the YRDP Relicensing Project in areas upstream of Englebright Dam would not combine with effects from other past, present, or reasonably foreseeable projects to adversely affect fisheries resources in areas upstream of Englebright Dam.

Lower Yuba River

Based on the projects considered in the cumulative assessment, projects that could result in short-term construction-related effects to fisheries in the lower Yuba River include: (1) habitat enhancement projects (Yuba River Resilience Initiative, Narrows 2 LMW Mitigation Plan, Hallwood Side Channel and Floodplain Restoration Project, Timbuctoo Acquisition and Restoration Project, Yuba River Canyon Salmon Habitat Restoration Project, Upper Long Bar Restoration Project, Lower Long Bar Restoration Project, Upper Rose Bar Habitat Restoration Project); (2) levee improvement projects (500-year Flood Protection Project, Marysville Ring Levee, Yuba North Training Wall Project); (3) diversion and screening-related projects (Hallwood/Cordua Canal – Fish Screen Return Line Replacement, South Canal Diversion Water Supply and Fish Passage Enhancement Annual Maintenance Project); (4) other ground-disturbing projects (e.g., Yuba City Boat Ramp Sediment Removal Project); and (5) water supply improvement projects. Construction-related impacts from these projects would be limited and temporary in nature and include implementation of impact avoidance and mitigation measures. Although short-term disturbances to fish species and their habitat could occur during implementation of some YRDP conditions/implementation plans in the lower Yuba River, these potential impacts would be minimized through implementation of BMPs, specific planning processes, and resource agency coordination. These effects would not combine with effects from other past, present, or reasonably foreseeable projects to adversely affect fisheries resources in the lower Yuba River.

Downstream of the Lower Yuba River

Based on the projects considered in the cumulative assessment, some projects located downstream of the lower Yuba River could result in short-term construction-related effects to fisheries in reaches of the Feather and Sacramento rivers downstream of the lower Yuba River (e.g., Sites Reservoir Project, Delta Conveyance Project). Construction-related impacts from these projects would generally be limited and temporary in nature, and include implementation of impact avoidance and mitigation measures which would avoid or minimize impacts in reaches downstream of the lower Yuba River. Potential impacts on water quality in reaches downstream of the lower Yuba River due to implementation of some YRDP conditions/implementation plans in the lower Yuba River would be minimized through implementation of BMPs, specific planning processes, permit acquisition and protection measures, and resource agency coordination. Consequently, construction-related impacts of the Proposed Projects would not combine with potential construction-related impacts from other past, present, or reasonably foreseeable projects to adversely affect fisheries resources in the reaches downstream of the lower Yuba River.

9.6.1.2 Cumulative Impacts on Fisheries Resulting from Operations

Under the cumulative condition, the YRDP Relicensing Project will change YRDP operations which influences reservoir storages, flows, and water temperatures in the YRDP Project Area. Narrows Project operations under the cumulative condition will remain the same as under the Existing Condition. Implementation of the YB/DS relicensing projects is considered through hydrologic and water temperature modeling (see Appendices 4B and 4C). Other projects considered in the fisheries cumulative assessment are addressed qualitatively.

Areas Upstream of Englebright Dam

Monthly average flows in the NBBD Reach of the North Yuba River are substantially higher during July through November over the entire simulation period and during most WYTs. Flows during December through June are typically lower during Wet and Above Normal WYs, and typically higher during Below Normal, Dry and Critical WYs. Average monthly flows are particularly higher (higher by about 200-600%, i.e., from about 8 cfs up to 32-62 cfs) during June through September of Below Normal, Dry and Critical WYs. Monthly average water temperatures in the North Yuba River (NBBD Reach) are substantially lower (cooler by up to about 9-14°F) during June through September over the entire simulation period and by WYT, and are warmer (by about 1.5-1.8°F) during April and May of Wet WYs.

Under the Cumulative Condition (Proposed Projects) relative to the Existing Condition, monthly average flows in Oregon Creek (below LCDD) are substantially higher during March through July, particularly during April through June (higher by about 140-180%, i.e., from about 9-24 cfs up to 21-58 cfs), and lower (lower by about 18-29%, i.e., from 12-39 cfs down to 10-28 cfs) during November and December over the entire simulation period. During November and December flows are lower during Wet and Above Normal WYs but are higher during Below Normal, Dry and Critical WYs. Flows are higher during most WYTs during January through June. Monthly average water temperatures in Oregon Creek are similar (e.g., different by less than 0.5°F) during most months over the entire simulation period and by WYT but are typically cooler (about 1-3°F cooler) during July through September of most WYTs below LCDD.

Monthly average flows in the Middle Yuba River (below OHDD) are higher year-round over the entire simulation period and by WYT. Average monthly flows are particularly higher during November, December and April through July when overall average flows increase by about 60 to more than 150 percent depending on location. Monthly average water temperatures in the Middle Yuba River below OHDD are slightly cooler (up to about 1°F cooler) during July through September of most WYTs.

Monthly average flows in the upper Yuba River upstream of Colgate Powerhouse are substantially higher during April through December over the entire simulation period and by WYT and are higher year-round during drier WYTs. Average monthly flows are particularly higher during July and August when overall average flows increase by approximately 100 to 150 percent (i.e., from 47-56 cfs up to 100-143 cfs). Monthly average water temperatures in the upper Yuba River upstream of Colgate Powerhouse are slightly (less than about 1°F) lower during October, April and May, and are substantially lower during June through September over the entire simulation

period and by WYT, particularly at the upstream node (below Middle Yuba River) where water temperatures over the entire simulation period are reduced by about 5-10°F.

Monthly average flows downstream of Colgate Powerhouse are typically similar (within about 5%) during all months over the entire simulation period. Monthly average water temperatures downstream of Colgate Powerhouse are similar during most months but are cooler during November and December (by about 1°F) and are warmer during April through June (by about 0.5-1.5°F).

The Cumulative Condition (Proposed Projects) results in changes in flows and water temperatures, relative to the Existing Condition that are very similar to those changes observed for the Proposed Projects relative to the Existing Condition (see Appendix 4B and 4C) and result in the same species-specific suitability conclusions. The primary difference between the Cumulative Condition (Proposed Projects) and the Proposed Projects is the inclusion of the YB/DS relicensing projects and the mandatory 4(e) flow requirements in the Cumulative Condition. Habitat suitabilities under the Cumulative Condition (Proposed Projects) relative to the Existing Condition are summarized below.

- More suitable conditions for rainbow trout in the North Yuba River due to more suitable habitat availability conditions for adults and juveniles during summer and fall, more suitable habitat availability for spawning, and more suitable water temperature conditions for adults and juveniles during summer, and for spawning.
- More suitable conditions for rainbow trout in Oregon Creek due to similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability for spawning, and improved thermal suitability for adults and juveniles during summer (about 30% reduction in exceedance of 68°F) below LCDD.
- Overall, slightly more suitable conditions for rainbow trout in the Middle Yuba River due to improved physical habitat availability conditions for adults in the upper reaches and for spawning in the lowermost reach, similar or less suitable physical habitat conditions for juveniles, and similar thermal suitability conditions for all lifestages throughout the Middle Yuba River.
- Overall, more suitable conditions for rainbow trout in the upper Yuba River due to more suitable physical habitat availability for adults, less suitable habitat availability for juveniles upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate, and similar habitat availability and thermal suitability conditions for all rainbow trout lifestages downstream of Colgate.
- Overall, less suitable habitat conditions for hardhead in the lower portion of the 2.3-mile NBBD Reach of the North Yuba River. Although physical habitat availability would be improved, less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall.
- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable physical habitat availability for adults during summer and improved thermal suitability for spawning upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate.

- Overall, less suitable conditions for Sacramento pikeminnow in the North Yuba River due to overall improved physical habitat availability but less preferable (cooler) water temperatures for adults and juveniles during summer and early fall.
- Similar conditions for Sacramento pikeminnow in the upper Yuba River due to more suitable habitat availability conditions for adults during summer upstream of Colgate, less preferable (cooler) water temperatures for adults and juveniles during summer and fall upstream of Colgate, and similar conditions for all lifestages downstream of Colgate.
- Overall, less suitable conditions for Sacramento sucker in the North Yuba River due to improved physical habitat availability for juveniles and adults, and less preferable (cooler) water temperature conditions for juveniles and adults during summer and early fall.
- Similar conditions for Sacramento sucker in Oregon Creek due to overall similar physical habitat availability and water temperature conditions for adults and juveniles across the three locations evaluated.
- Similar conditions for Sacramento sucker in the Middle Yuba River due to slightly more suitable adult physical habitat conditions, slightly less suitable juvenile physical habitat conditions, and similar water temperature conditions for adults and juveniles in the Middle Yuba River.
- Similar conditions for Sacramento sucker in the upper Yuba River due to similar or more suitable physical habitat availability for adults upstream of Colgate, less suitable habitat availability for juveniles upstream of Colgate, less preferable (cooler) water temperatures for adults and juveniles during summer and fall upstream of Colgate, and similar habitat availability and water temperature conditions for adults and juveniles downstream of Colgate.

Based on the analyses and suitability conclusions above, operations of the Proposed Projects under the cumulative condition would result in overall similar or more suitable conditions for the entire suite of fish species of management concern in the YRDP reaches upstream of Englebright Dam (due to YRDP operations only) except for hardhead, Sacramento pikeminnow, and Sacramento sucker in the North Yuba River. Although operations-related activities would result in substantially less preferred thermal habitat conditions for these species in the lower portion of the 2.3-mile NBBD reach, habitat conditions in the longer 7.5-mile long upper Yuba River would be slightly more suitable. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit utilization and survival of hardhead, Sacramento pikeminnow and Sacramento sucker in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for colonization of the 2.3-mile NBBD Reach, the substantially longer upper Yuba River (5.8 miles upstream of Colgate) (and Englebright Reservoir) would provide refuge for these species when water temperatures are less preferred during the summer and early fall in the North Yuba River.

USACE's pending New Bullards Bar Dam and Reservoir Water Control Manual could alter flows in the North Yuba River and upper Yuba River during high-flow events, but these changes in flows during winter or spring would not be expected to have substantive adverse effects on fisheries habitat availability or thermal suitability conditions in the upper Yuba River Watershed.

In consideration of the projects included in the fisheries cumulative analysis (including the Proposed Projects) in the areas upstream of Englebright Dam, the cumulative condition (with the Proposed Projects) would not be expected to result in adverse impacts to fisheries resources in the YRDP reservoirs and reaches of the upper Yuba River Watershed.

Lower Yuba River

The Cumulative Condition (Proposed Projects) would provide habitat conditions for all fish species of management concern in the lower Yuba River that would be similar to those provided under the Existing Condition. Monthly average flows in the lower Yuba River are generally similar (e.g., +/- 5 percent) over the entire simulation period and during most months during all WYTs under the Cumulative Condition (Proposed Projects) relative to the Existing Condition. Monthly average water temperatures in the lower Yuba River are similar (e.g., different by less than 0.5°F) during most months over the entire simulation period and by WYT, but: (1) monthly average water temperatures are warmer during May and June by about 0.5-1°F; and (2) monthly average water temperatures increase by approximately 0.5-1°F during most months from May through September in Dry and Critical years at Smartsville and Parks Bar.

The Cumulative Condition (Proposed Projects) results in changes in flows and water temperatures, relative to the Existing Condition that are very similar to those changes observed for the Proposed Projects relative to the Existing Condition (see Appendix 4B and 4C) and result in the same species-specific suitability conclusions except for less suitable spring-run Chinook salmon spawning and initial incubation conditions due to increased water temperatures during September through mid-October. The similarities in changes between the Cumulative Condition (Proposed Projects) relative to the Existing Condition, and the Proposed Projects relative to the Existing Condition, result from the fact that the only substantial difference affecting suitabilities between the two scenario comparisons is that the Cumulative Condition (Proposed Projects) includes the impacts associated with implementing the 4(e) flow requirements for the YB/DS projects. The Cumulative Condition (Proposed Projects) results in less suitable water temperatures for spring-run Chinook salmon spawning and incubation during September through mid-October, primarily due to the implementation of the YB/DS relicensing projects and the mandatory 4(e) flow requirements (see Figure C8-Temp-9 and Figure C8-Temp-10 in Appendix 4c). Habitat suitabilities under the Cumulative Condition (Proposed Projects) relative to the Existing Condition are summarized below.

- Generally similar conditions for spring-run Chinook salmon in the lower Yuba River due to: (1) essentially equivalent or very similar levels of flow-dependent physical habitat by lifestage; and (2) similar thermal suitability conditions for adult immigration and holding, juvenile rearing and downstream movement, and smoltification. However, less suitable conditions for spring-run Chinook salmon spawning and embryo incubation due to up to about a 50% reduction in the length of thermally optimal (<56°F) spawning habitat and nearly a 30% reduction in the length of thermally tolerable (<58°F) spawning habitat during the peak spring-run Chinook salmon spawning period (mid-September to early October; see Proposed Projects (future) in Figure 7 and Existing Condition in Figure 3 in Appendix 9C).

- Similar conditions for fall-run Chinook salmon in the lower Yuba River due to essentially equivalent levels of flow-dependent physical habitat by lifestage, and similar thermal suitability conditions for adult immigration and staging, spawning and embryo incubation, and juvenile rearing and downstream movement.
- Similar conditions for steelhead in the lower Yuba River due to essentially equivalent or very similar levels of flow-dependent physical habitat by lifestage, and similar thermal suitability conditions for adult immigration and holding, spawning and embryo incubation, juvenile rearing and downstream movement, and smoltification.
- Similar conditions for green sturgeon in the lower Yuba River due to essentially equivalent or similar levels of flow-dependent physical habitat for adult holding and spawning, slightly less suitable thermal suitability conditions for adult immigration and holding, and similar thermal suitability conditions for spawning and embryo incubation, adult post-spawn holding, and juvenile rearing and emigration.
- Similar conditions for lamprey in the lower Yuba River due to essentially equivalent levels of flow-dependent physical habitat for spawning and ammocoete rearing, similar or slightly less suitable thermal suitability conditions for adult immigration, and similar thermal suitability conditions for spawning and embryo incubation and ammocoete rearing.
- Similar conditions for white sturgeon in the lower Yuba River due to similar thermal suitability conditions for adult immigration and holding.
- Similar conditions for other fish species of primary management concern in the lower Yuba River (i.e., hardhead, Central California roach, striped bass, and American shad).

The potential contribution to impacts on fisheries resources in the lower Yuba River associated with individual projects included in the Cumulative condition are described below.

The Lower Yuba River Accord Water Transfer Program Extension would not result in changes to YRDP operations and therefore would not result in substantial effects to fish species in the lower Yuba River.

The Yuba River Resilience Initiative (YRRI) would include construction of a nature-like fishway (NLF) at Daguerre Point to address fish passage issues associated with fish ladders at DPD and outdated diversion infrastructure at the South Canal diversion. Although there would be no changes to YRDP or Narrows Project operations in the lower Yuba River (i.e., no changes in flows), the NLF would provide unimpeded passage to ESA-listed and native anadromous fish species (i.e., Chinook salmon, steelhead, green sturgeon, white sturgeon, lamprey) to high quality habitats between DPD and Englebright Dam. Consequently, the YRRI would result in beneficial effects to anadromous and native fish species in the lower Yuba River.

The HR&L Program includes habitat improvement projects that target anadromous fish species in the lower Yuba River and is anticipated to potentially result in some increases in flows in the lower Yuba River during April, May and/or June in Above Normal, Below Normal and Dry WYs. Habitat improvement projects are designed to improve long-term physical habitat conditions for fisheries resources in the lower Yuba River. The HR&L Program could result in primarily higher flows in the lower Yuba River during the spring and reduced NBBR storage during spring through

summer of some years. Due to reductions in NBBR storage, flows in the lower Yuba River subsequent to an Above Normal, Below Normal or Dry year could decrease during some months of some years. Water temperatures during spring could decrease slightly during some years and increase slightly during other years. Implementation of habitat enhancement projects under the HR&L Program increase availability of suitable habitat for anadromous salmonids and potentially other fish species in the lower Yuba River. Two habitat enhancement projects associated with the HR&L Program (Hallwood Side Channel and Floodplain Restoration Project and the Lower Long Bar Restoration Project) have resulted in demonstrated increases in habitat availability for juvenile salmonids. These projects have included enhancement of habitat within grading footprints of up to about 200 acres of seasonally inundated riparian floodplain, side channels, alcoves, and swales. Enhancements were made through topographic modifications, floodplain lowering, channel design, riparian planting, and placement of LWM. Additional projects associated with the HR&L Program that have not been implemented would be expected to result in similar types of improvements to physical habitat conditions for juvenile salmonids and other fish species in the lower Yuba River.

Implementation of habitat enhancement projects (described above under Section 9.6.1.1) in the lower Yuba River would result in more suitable physical habitat conditions for fish species in the lower Yuba River, including more suitable habitat conditions for anadromous salmonids.

USACE's Authorized Operations and Maintenance of Existing Fish Passage Facilities at Daguerre Point Dam on the lower Yuba River could include actions that would increase the efficacy of fish passage conditions at DPD. Effects of these activities would be overall beneficial to fisheries resources in the lower Yuba River.

USACE's pending New Bullards Bar Dam and Reservoir Water Control Manual could alter flows in the lower Yuba River during high-flow events, but these changes in flows during winter or spring would not be expected to have substantive adverse effects on fisheries habitat availability or thermal suitability conditions in the lower Yuba River.

Overall, the combined impacts of projects included in the fisheries cumulative analysis (including the Proposed Projects) in the areas in the lower Yuba River would not substantially adversely affect fisheries resources in the lower Yuba River and would result in beneficial effects due to the habitat and passage enhancement projects.

Downstream of the Lower Yuba River

In addition to projects in the Yuba River Watershed that could influence flows and habitat conditions downstream of the lower Yuba River (e.g., New Bullards Bar Dam and Reservoir Water Control Manual), projects considered in the fisheries cumulative analysis that have the potential to impact fisheries habitat conditions in the reaches downstream of the lower Yuba River include: (1) Oroville Facilities Hydroelectric Project FERC Relicensing (FERC Project No. 2100); (2) South Feather Power Project FERC Relicensing (FERC Project No. 2088); (3) Coordinated Long-term Operation of the CVP and the SWP; (4) CVP and SWP 1986 COA; (5) Long-term and Short-term Water Transfers; (6) Sites Reservoir Project; (7) Delta Conveyance Project; and (8) HR&L Program. Overall, these projects have the potential to change flow and water temperature conditions, and substantially alter fisheries habitat conditions in the lower Feather River

downstream of the lower Yuba River, the Sacramento River downstream of the lower Feather River and the Delta. However, these projects generally include physical habitat enhancement measures to mitigate for potentially significant operations-related impacts (e.g., DWR 2022). Nonetheless, the combined long-term impacts of these projects are uncertain and could have the potential to adversely affect fish species, particularly in the Sacramento River and Delta.

As described above, based on the very low to negligible proportionate changes in Feather River and Sacramento River flows downstream of the Yuba River resulting from implementation of the Proposed Projects, YRDP operations have extremely limited potential to impact migration and habitat conditions for fish species in areas downstream of the lower Yuba River under the cumulative condition.

9.6.1.3 Cumulative Condition (Proposed Projects) Impact Determinations

YRDP Cumulative Impact FISH-PP-1: Cumulative impacts to fisheries resources in the Project Area.

Based on the analyses above, under the cumulative condition including the Proposed Projects, the cumulative impact to fisheries resources in the Project Area would be significant because of: (1) the potential for significant adverse impacts to spring-run Chinook salmon spawning and embryo incubation in the lower Yuba River associated with implementing the 4(e) flow requirements for the YB/DS projects; and (2) the potential for significant adverse impacts to fish species in areas downstream of the lower Yuba River associated with cumulative projects other than the Proposed Projects.

However, the Proposed YRDP's incremental contribution to the cumulative impact to fisheries resources in the Project Area would not be cumulatively considerable because: (1) construction-related impacts of the YRDP would be minimized or avoided through application of impact avoidance measures and BMPs; (2) operations of the YRDP would not substantially affect fisheries resources in the YRDP reservoirs and reaches of the upper Yuba River Watershed, given the overall preponderance of similar or more suitable habitat conditions for fish species of management concern; (3) although less suitable conditions for spring-run Chinook salmon spawning and embryo incubation would occur in the lower Yuba River as a result of implementing the 4(e) flow requirements for the YB/DS projects, operations of the YRDP would not substantially affect fisheries resources in the lower Yuba River given the overall similar habitat conditions for fish species of management concern; and (4) operations of the YRDP would not substantially affect fisheries resources in areas downstream of the lower Yuba River based on the extremely limited potential to impact migration and habitat conditions for fish species downstream of the lower Yuba River. Consequently, the Proposed YRDP would result in a **less-than-significant cumulative impact** to fisheries resources.

Narrows Cumulative Impact FISH-PP-1: Cumulative impacts to fisheries resources in the Project Area.

Based on the analyses above, under the cumulative condition including the Proposed Projects, the cumulative impact to fisheries resources in the Project Area would be significant because of the

potential for significant adverse impacts to fish species in areas downstream of the lower Yuba River associated with cumulative projects other than the Proposed Projects.

However, the Proposed Narrows Project's incremental contribution to the cumulative impact to fisheries resources in the Project Area would not be cumulatively considerable because: (1) there would be no construction activities associated with the Narrows Project; and (2) Narrows Project operations under the cumulative condition will remain the same as under the Existing Condition. Consequently, the Proposed Narrows Project would result in a **less-than-significant cumulative impact** to fisheries resources.

9.6.2 Cumulative Condition (Alternative 1) compared to the Existing Condition

9.6.2.1 Cumulative Impacts on Fisheries Resulting from Construction Activities

Construction activities planned under Alternative 1 do not differ from those planned under the Proposed Projects. Therefore, the assessment of the cumulative condition with Proposed Projects' construction-related cumulative impacts (above) also applies to the cumulative impacts analysis under the cumulative condition with Alternative 1. Construction-related cumulative effects would not combine with effects from other past, present, or reasonably foreseeable projects to adversely affect fisheries resources in areas upstream of Englebright Dam, in the lower Yuba River or in areas downstream of the lower Yuba River.

9.6.2.2 Cumulative Impacts on Fisheries Resulting from Operations

Under the cumulative condition, the YRDP Relicensing Project will change YRDP operations which influences reservoir storages, flows, and water temperatures in the YRDP Project Area. Narrows Project operations under the cumulative condition will remain the same as under the Existing Condition. Implementation of the YB/DS relicensing projects are considered through hydrologic and water temperature modeling. All other projects considered in the fisheries cumulative assessment are addressed qualitatively.

Under the Cumulative Condition (Alternative 1), changes in flows (and physical habitat conditions) and water temperatures relative to the Existing Condition are the same as those identified (above) for the Cumulative Condition (Proposed Projects) relative to the Existing Condition, with the exceptions of: (1) water temperatures in the Middle Yuba River (below OHDD); (2) flows and water temperatures in the upper Yuba River (downstream of Colgate Powerhouse); and (3) flows and water temperatures in the lower Yuba River, which are summarized below.

Differences in water temperatures in the Middle Yuba River (reaches below OHDD) under the Cumulative Condition (Alternative 1) relative to the Existing Condition are the same as those under the Cumulative Condition (Proposed Projects) except for potential decreases in water temperatures during April and May of Dry and Critical WYs. Water temperatures under the Cumulative Condition (Proposed Projects) decreased by up to about 0.6-1.1°F, whereas they decreased by up to about 1.0-1.5°F under the Cumulative Condition (Alternative 1).

In the upper Yuba River downstream of Colgate Powerhouse, differences in flows under the Cumulative Condition (Alternative 1) relative to Existing Condition are the same or very similar to differences under the Cumulative Condition (Proposed Projects) except for: (1) substantially higher flows during September of Dry WYs (20% higher under Cumulative Condition (Alternative 1) vs. 4% lower under Cumulative Condition (Proposed Projects) relative to Existing Condition) and Critical WYs (32% higher vs. 5% higher relative to Existing Condition); and (2) substantially lower flows during April of Critical WYs (23% lower vs. 2% lower relative to Existing Condition). Differences in water temperatures under the Cumulative Condition (Alternative 1) relative to the Existing Condition are the same or very similar to differences under the Cumulative Condition (Proposed Projects) except for: (1) slightly greater increases in water temperatures during April of Critical WYs (1.7°F higher vs. 1°F higher relative to Existing Condition); and (2) slightly greater reductions in water temperatures during September of Critical WYs (0.6°F lower vs. 0.1°F lower relative to Existing Condition).

In the lower Yuba River, differences in flows under the Cumulative Condition (Alternative 1) relative to Existing Condition are similar to differences under the Cumulative Condition (Proposed Projects) except for: (1) substantially higher flows during September of Dry WYs (18% higher vs. unchanged relative to Existing Condition) and Critical WYs (28% higher vs. 9% higher relative to Existing Condition). Differences in water temperatures under the Cumulative Condition (Alternative 1) relative to the Existing Condition are the same or very similar to differences under the Cumulative Condition (Proposed Projects) except for reductions in water temperatures during September of Dry WYs (about 0.6°F lower vs. 0.5°F higher at Parks Bar relative to Existing Condition) and Critical WYs (1.2°F lower vs. 0.1°F higher at Parks Bar relative to Existing Condition).

Changes in flows and water temperatures under the Cumulative Condition (Alternative 1) relative to the Existing Condition summarized above for YRDP reaches upstream of Englebright Dam and in the lower Yuba River result in the same species-specific suitability conclusions previously described for Alternative 1 relative to the Existing Condition (see Appendix 9C). Habitat suitabilities under Cumulative Condition (Alternative 1) relative to the Existing Condition are summarized below.

- More suitable conditions for rainbow trout in the North Yuba River due to more suitable habitat availability conditions, including higher or substantially higher amounts of adult and juvenile rainbow trout habitat during most seasons, higher rainbow trout spawning habitat in all WYTs, and more suitable thermal suitabilities for adults and juveniles during summer, and for spawning.
- More suitable conditions for rainbow trout in Oregon Creek due to similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability for spawning, and improved thermal suitability for adults and juveniles during summer (about 30% reduction in exceedance of 68°F) below LCDD.
- Overall, slightly more suitable conditions for rainbow trout in the Middle Yuba River due to improved habitat availability conditions for adults in the upper reaches and for spawning in the lowermost reach, similar or less suitable conditions for juveniles, and similar or slightly improved thermal suitability conditions.

- Overall more suitable conditions for rainbow trout in the upper Yuba River due to more suitable habitat availability conditions for adults, less suitable habitat availability for juveniles upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate, and similar habitat availability and thermal suitability conditions for all rainbow trout lifestages downstream of Colgate.
- Overall, less suitable habitat conditions for hardhead in the North Yuba River. Although habitat availability would be improved, less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall in the North Yuba River above the confluence with the Middle Yuba River.
- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable habitat availability for adults during summer and fall and improved thermal suitability for spawning upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate.
- Overall, less suitable conditions for Sacramento pikeminnow in the North Yuba River due to overall improved habitat availability but less preferable (cooler) water temperatures for adults and juveniles during summer and early fall.
- Similar conditions for pikeminnow in the upper Yuba River due to more suitable habitat availability conditions for adults during summer upstream of Colgate, less preferable (cooler) water temperatures for adults and juveniles during summer and fall upstream of Colgate, and similar conditions for all lifestages downstream of Colgate.
- Overall, less suitable conditions for Sacramento sucker in the North Yuba River due to improved habitat availability for juveniles and adults, and less preferable (cooler) water temperature conditions for juveniles and adults during summer and early fall.
- Similar conditions for Sacramento sucker in Oregon Creek due to overall similar habitat availability and water temperature conditions across the three locations evaluated.
- Similar conditions for Sacramento sucker in the Middle Yuba River due to slightly more suitable adult habitat conditions, slightly less suitable juvenile habitat conditions, and similar water temperature conditions for adults and juveniles in the Middle Yuba River.
- Similar conditions for Sacramento sucker in the upper Yuba River due to similar or more suitable habitat availability for adults upstream of Colgate, less suitable habitat availability for juveniles upstream of Colgate, less suitable habitat availability for juveniles upstream of Colgate, less preferable (cooler) water temperatures for adults and juveniles during summer and fall upstream of Colgate, and similar habitat availability and water temperature conditions for adults and juveniles downstream of Colgate.
- Similar or more suitable conditions for spring-run Chinook salmon in the lower Yuba River due to essentially equivalent or very similar levels of flow-dependent physical habitat by lifestage, more suitable thermal suitability conditions for spawning and embryo incubation during Dry and Critical WYs, and similar thermal suitability conditions for adult immigration and holding, juvenile rearing and downstream movement, and smoltification.
- Similar conditions for fall-run Chinook salmon in the lower Yuba River due to essentially equivalent levels of flow-dependent physical habitat by lifestage, and similar thermal

suitability conditions for adult immigration and staging, spawning and embryo incubation, and juvenile rearing and downstream movement.

- Similar conditions for steelhead in the lower Yuba River due to essentially equivalent or very similar levels of flow-dependent physical habitat by lifestage, and similar thermal suitability conditions for adult immigration and holding, spawning and embryo incubation, juvenile rearing and downstream movement, and smoltification.
- Similar conditions for green sturgeon in the lower Yuba River due to essentially equivalent or similar levels of flow-dependent physical habitat for adult holding and spawning, slightly less suitable thermal suitability conditions for adult immigration and holding, and similar thermal suitability conditions for spawning and embryo incubation, adult post-spawn holding, and juvenile rearing and emigration.
- Similar conditions for lamprey in the lower Yuba River due to essentially equivalent levels of flow-dependent physical habitat for spawning and ammocoete rearing, similar or slightly less suitable thermal suitability conditions for adult immigration, and similar thermal suitability conditions for spawning and embryo incubation and ammocoete rearing.
- Similar conditions for white sturgeon in the lower Yuba River due to similar thermal suitability conditions for adult immigration and holding.
- Similar conditions for other fish species of primary management concern in the lower Yuba River (i.e., hardhead, Central California roach, striped bass, and American shad).

With the exception of improved thermal suitability conditions for spring-run Chinook salmon spawning and embryo incubation during Dry and Critical WYs in the lower Yuba River associated with Alternative 1, species-specific suitabilities under the Cumulative Condition (Alternative 1) are consistent with those identified for the Cumulative Condition (Proposed Projects) relative to the Existing Condition. Analysis of spring-run Chinook salmon spawning and incubation thermally suitable habitat under Alternative 1 (and Cumulative Condition (Alternative 1)) relative to the Existing Condition (see Figures 9-12 for Alternative 1 in Appendix 9C) demonstrates that Alternative 1 effectively mitigates for the adverse water temperature impacts on spring-run Chinook salmon spawning and initial incubation caused by the YB/DS 4(e) conditions when considering all water years, and substantially improves thermal conditions during Dry and Critical WYs, relative to the Existing Condition.

Assessment of the potential contribution to impacts on fisheries resources from other projects considered in the fisheries cumulative analysis upstream of Englebright Dam and in the lower Yuba River (i.e., Lower Yuba River Accord Water Transfer Program Extension Program, YRRI, HR&L Program, various habitat enhancement projects and other ground-disturbing projects in the lower Yuba River, USACE's Authorized Operations and Maintenance of Existing Fish Passage Facilities at Daguerre Point Dam, USACE's pending New Bullards Bar Dam and Reservoir Water Control Manual) would be consistent with the discussion under the Proposed Projects cumulative analysis above. Overall, the combined impacts of these projects with Alternative 1 would not substantially adversely affect fisheries resources in the YRDP reservoirs and reaches of the upper Yuba River Watershed and in the lower Yuba River, and would result in beneficial effects to fish species in the lower Yuba River due to the habitat and passage enhancement projects.

Under the cumulative condition with Alternative 1, the fisheries Project Area also includes the YB/DS reservoirs and reaches of the Middle Yuba River and South Yuba River (and Canyon and Fordyce creeks). YB/DS FERC license conditions will change flows and water temperatures in YB/DS reaches year-round relative to the Existing Condition. In general, proposed minimum instream flows under the YB/DS FERC license conditions are higher than under the Existing Condition in YB/DS streams, and would enhance existing habitat conditions for resident rainbow trout (FERC 2014). Specifically, increases in flow under implementation of the new YB/DS FERC licenses would be expected to result in greater flow-dependent habitat availability in the focal reaches of the Middle Yuba and South Yuba rivers (i.e., below Milton Diversion Dam and below Lake Spaulding Dam) for rainbow trout, particularly the adult and spawning lifestages, which were targeted for improvement by YB/DS Relicensing Participants (FERC 2014).

As described above, the provision of the 15.6 TAF from the YB/DS projects is not expected to substantially affect habitat conditions for the fish species evaluated in the YB/DS reaches under Alternative 1 based on analysis of potential changes in flow-dependent habitat availability and thermal suitability, and because of: (1) operational flexibility (e.g., geographic source) of the YB/DS reservoirs in providing the 15.6 TAF; (2) permutations in the allocation (e.g., variable amounts) among YB/DS reservoirs; (3) the potential for provision of the 15.6 TAF through reductions in diversions (and exports out of the upper Yuba River Watershed), releases from storage, or a combination thereof; (4) implementation of ramping rates (both increases and decreases); and (5) resource agency technical assistance in fashioning the releases.

Assessment of effects of other projects considered in the fisheries cumulative analysis for areas downstream of the lower Yuba River with Alternative 1 would be consistent with the discussion under the Proposed Projects cumulative analysis above. The combined long-term impacts of the projects included in the cumulative condition downstream of the lower Yuba River are uncertain but could have the potential to adversely affect fish species, particularly in the Sacramento River and Delta. However, based on the very low to negligible proportionate changes in Feather River and Sacramento River flows downstream of the Yuba River resulting from implementation of Alternative 1, YRDP operations have extremely limited potential to impact migration and habitat conditions for fish species downstream of the lower Yuba River under the cumulative condition.

9.6.2.3 Cumulative Condition (Alternative 1) Impact Determinations

YRDP Cumulative Impact FISH-Alt1-1: Cumulative impacts to fisheries resources in the Project Area.

With the exception of improved thermal suitability conditions for spring-run Chinook salmon spawning and embryo incubation during Dry and Critical WYs in the lower Yuba River associated with Alternative 1, species-specific suitabilities in the lower Yuba River and in the YRDP reaches upstream of Englebright Dam under the Cumulative Condition (Alternative 1) are consistent with those identified for the Cumulative Condition (Proposed Projects). That is, the species-specific suitabilities for the lower Yuba River and for YRDP reaches upstream of Englebright Dam would be similar or more suitable under the cumulative condition with Alternative 1 relative to the Existing Condition. However, based on the analyses above, the cumulative condition including Alternative 1 is assumed to be significant for fisheries resources in the Project Area because there

is the potential for significant adverse impacts to fish species in areas downstream of the lower Yuba River associated with cumulative projects other than Alternative 1.

However, the Proposed YRDP's incremental contribution to the cumulative impact to fisheries resources in the Project Area would not be cumulatively considerable because: (1) construction-related impacts of the YRDP would be minimized or avoided through application of impact avoidance measures and BMPs; (2) operations of the YRDP would not substantially affect fisheries resources in the YRDP reservoirs and reaches of the upper Yuba River Watershed, given the overall preponderance of similar or more suitable habitat conditions for fish species of management concern; (3) operations of the YRDP would not substantially affect fisheries resources in the lower Yuba River given the overall similar (or improved) habitat conditions for fish species of management concern; and (4) operations of the YRDP would not substantially affect fisheries resources in areas downstream of the lower Yuba River based on the extremely limited potential to impact migration and habitat conditions for fish species downstream of the lower Yuba River. Consequently, the Proposed YRDP under Alternative 1 would result in a **less-than-significant** cumulative impact to fisheries resources.

Narrows Cumulative Impact FISH-Alt1-1: Cumulative impacts to fisheries resources in the Project Area.

Based on the analyses above, under the cumulative condition, including Alternative 1, the cumulative impact to fisheries resources in the Project Area would be significant because of the potential for significant adverse impacts to fish species in areas downstream of the lower Yuba River associated with cumulative projects other than Alternative 1.

However, the Proposed Narrows Project's incremental contribution to the cumulative impact to fisheries resources in the Project Area would not be cumulatively considerable because: (1) there would be no construction activities associated with the Narrows Project; and (2) Narrows Project operations under the cumulative condition will remain the same as under the Existing Condition. Consequently, the Proposed Narrows Project would result in a **less-than-significant cumulative impact** to fisheries resources.

9.6.3 Cumulative Condition (Alternative 2) compared to the Existing Condition

9.6.3.1 Cumulative Impacts on Fisheries Resulting from Construction Activities

Construction activities planned under Alternative 2 do not differ from those planned under the Proposed Projects. Therefore, the assessment of the cumulative condition with Proposed Projects' construction-related cumulative impacts (above) also applies to the cumulative impacts analysis under the cumulative condition with Alternative 2. Construction-related cumulative impacts would not combine with effects from other past, present, or reasonably foreseeable projects to adversely affect fisheries resources in areas upstream of Englebright Dam, in the lower Yuba River or in areas downstream of the lower Yuba River.

9.6.3.2 Cumulative Impacts on Fisheries Resulting from Operations

Under the cumulative condition, Alternative 2 will change YRDP and YB/DS operations which influence reservoir storages, flows, and water temperatures in the Project Area. Narrows Project operations under the cumulative condition will remain the same as under the Existing Condition. Under the Cumulative Condition with Alternative 2, flows and water temperatures relative to the Existing Condition are summarized below.

Monthly average flows in the North Yuba River are substantially higher during July through November over the entire simulation period and during most WYTs. Flows during December through June are typically lower (lower by about 15-75%) during Wet and Above Normal WYs. Flows during December through March are mostly higher (higher by up to about 80%) during Below Normal, Dry and Critical WYs. Average monthly flows are particularly higher during June through September of Below Normal, Dry and Critical WYs, when flows often increase from about 8-9 cfs up to about 32-62 cfs, and during July through September of Wet and Above Normal WYs, when flows increase from about 8-10 cfs up to about 32-113 cfs.

Monthly average water temperatures in the North Yuba River are substantially lower during June through October over the entire simulation period and by WYT. Water temperatures are particularly lower during June through September when water temperatures over the entire simulation period are reduced by about 5 to 6°F below NBBD and by about 10 to 14°F at just above the confluence with the Middle Yuba River. Water temperatures are slightly warmer during April and May of Wet WYs just above the confluence with the Middle Yuba River.

Monthly average flows in Oregon Creek are substantially higher (higher by about 125-180%; i.e., from about 9-24 cfs up to about 21-54 cfs) during April through July. Flows are higher (higher by about 20-120%) during Below Normal, Dry and Critical WYTs during January through June. Average monthly flows are particularly higher during April through June by WYT when flows below LCDD often increase by about 50 to over 300 percent (i.e., from about 10-70 cfs up to about 15-150 cfs). During November and December flows are lower (lower by about 21-40%) during Wet and Above Normal WYs but are higher (higher by about 9-35%) during Below Normal, Dry and Critical WYs.

Monthly average water temperatures in Oregon Creek are similar (e.g., different by less than 0.5°F) during September through May over the entire simulation period and by WYT, but are typically cooler (cooler by about 1-4°F) during June through October during most WYTs, particularly below LCDD.

Monthly average flows in the Middle Yuba River in the reaches downstream of OHDD are substantially higher (higher by about 40-300%) year-round over the entire simulation period and by WYT. Average monthly flows are particularly higher during April through July when overall average flows below OHDD increase by about 200 to more than 300 percent (i.e., from about 30-115 cfs up to about 275-480 cfs).

Monthly average water temperatures in the Middle Yuba River in the reaches downstream of OHDD are similar (e.g., different by less than 0.5°F) from September through February over the

entire simulation period and by WYT. Water temperatures are cooler (cooler by about 1-3°F) during April through July of most WYTs below Oregon Creek.

Monthly average flows in the upper Yuba River upstream of New Colgate Powerhouse are substantially higher (higher by about 20-200%) during April through December over the entire simulation period and by WYT, and are higher year-round during drier WYTs. Average monthly flows are particularly higher during July and August when overall average flows increase by approximately 100 to 200 percent (i.e., from about 56-320 cfs up to about 168-493 cfs). Monthly average water temperatures in the upper Yuba River upstream of Colgate are lower (lower by about 1-10°F) during March through September over the entire simulation period and by WYT. Water temperatures are particularly cooler during June through September just below the confluence with the Middle Yuba River where water temperatures are reduced by about 5-10°F.

Monthly average flows downstream of Colgate are lower (lower by up to about 30%) during July through October over the entire simulation period and by WYT, and are higher (higher by approximately 10-50%) during December through February, April and May during all WYTs except for Wet WYs. Monthly average water temperatures downstream of Colgate are similar during most months but are slightly cooler during November and December and are warmer (warmer by about 0.5-3.5°F) during April through August.

Flows and water temperatures in the lower Yuba River under the Cumulative Condition (Alternative 2) relative to the Existing Condition exhibit: (1) higher or substantially higher flows from December through May (particularly during drier WYTs) except during Wet WYs; (2) higher flows (21% higher) during November of Wet WYs; (3) during June, flows are substantially higher during Dry WYs and substantially lower during Critical WYs; (4) lower or substantially lower flows from July through September, except during July of Wet WYs. Water temperatures are higher during July through October, with progressively warmer water temperatures from wetter to drier WYTs. The most notable water temperature differences under the Cumulative Condition (Alternative 2) relative to the Existing Condition at DPD occur during July and August of Critical WYs with increased water temperatures of about 4.4 - 5.1°F.

The Cumulative Condition (Alternative 2) results in the same species-specific suitability conclusions as Alternative 2 relative to the Existing Condition. Species-specific suitabilities under Cumulative Condition (Alternative 2) are summarized below.

- More suitable conditions for rainbow trout in the North Yuba River due to higher or substantially higher amounts of adult habitat, higher or substantially higher amounts of juvenile habitat during most seasons, higher spawning habitat in all WYTs, and more suitable thermal conditions for adults and juveniles during summer, and for spawning.
- More suitable conditions for rainbow trout in Oregon Creek due to overall generally similar habitat availability conditions for adult and juvenile lifestages, improved habitat availability for spawning, and improved thermal suitability for adults and juveniles during summer (about 30% reduction in exceedance of 68°F) below LCDD.
- Generally similar conditions for rainbow trout in the Middle Yuba River due to: (1) substantially increased adult habitat during winter, summer and fall at the two upstream locations; (2) substantially increased habitat availability for spawning at the downstream-

most location; (3) substantially reduced habitat availability for spawning at the two uppermost locations evaluated; (4) substantial reductions in juvenile rearing habitat during winter and spring at both of the two uppermost locations evaluated; and (5) substantial reductions in juvenile rearing habitat during winter and spring at the downstream-most location. Thermal suitability conditions would be overall similar but slightly improved.

- Overall, more suitable conditions for rainbow trout in the upper Yuba River due to more suitable habitat availability conditions for adults, less suitable habitat availability for juveniles upstream of Colgate, substantially more suitable water temperature conditions for rainbow trout adults and juveniles upstream of Colgate, and similar habitat availability and thermal suitability conditions for all rainbow trout lifestages downstream of Colgate.

- Overall, less suitable habitat conditions for hardhead in a portion of the NBBD Reach of the North Yuba River. Although habitat availability would be improved, less preferable (cooler) water temperature conditions for adults and juveniles would occur during summer and early fall in the North Yuba River above the confluence with the Middle Yuba River.

- Slightly more suitable conditions for hardhead in the upper Yuba River due to more suitable habitat availability for adults during summer and improved thermal suitability for spawning upstream of Colgate, and similar habitat conditions for all lifestages downstream of Colgate.

- Overall, less suitable conditions for Sacramento pikeminnow in a portion of the NBBD Reach of the North Yuba River due to overall improved habitat availability but less preferable (cooler) water temperatures for adults and juveniles during summer and early fall.

- Similar conditions for pikeminnow in the upper Yuba River due to more suitable habitat availability conditions for adults during summer upstream of Colgate, less preferable (cooler) water temperatures for adults and juveniles upstream of Colgate during summer and fall, and similar conditions for all lifestages downstream of Colgate.

- Overall, less suitable conditions for Sacramento sucker in a portion of the NBBD Reach of the North Yuba River due to improved habitat availability for juveniles, and less preferable (cooler) water temperature conditions for juveniles and adults during summer and early fall.

- Similar conditions for Sacramento sucker in Oregon Creek due to overall generally similar habitat availability and water temperature conditions across the three locations evaluated.

- Slightly less suitable conditions for Sacramento sucker in the Middle Yuba River due to similar or less suitable adult habitat conditions and substantial reductions in juvenile habitat availability during winter, spring and summer at all three locations evaluated. Water temperature conditions are generally similar for adults and juveniles in the Middle Yuba River.

- Less suitable conditions for Sacramento sucker in the upper Yuba River due to substantially reduced adult habitat during the spring and substantially reduced juvenile habitat during all seasons upstream of Colgate, less preferable (cooler) water temperatures for adults and juveniles during summer and fall upstream of Colgate, and generally similar conditions for adults and juveniles downstream of Colgate.
- Overall, substantially less suitable conditions for spring-run Chinook salmon in the lower Yuba River due to similar levels of flow-dependent physical habitat for most lifestages, but less suitable thermal suitability conditions for adult immigration and holding, and juvenile rearing, substantially less suitable thermal suitability conditions for spawning and embryo incubation, and similar thermal suitability conditions for juvenile downstream movement and smoltification.
- Slightly less suitable conditions for fall-run Chinook salmon in the lower Yuba River due to similar or slightly reduced levels of flow-dependent physical habitat by lifestage, less suitable thermal suitability conditions for adult immigration and staging, similar or less suitable thermal suitability conditions for spawning and embryo incubation, and similar thermal suitability conditions for juvenile rearing and downstream movement.
- Slightly less suitable conditions for steelhead in the lower Yuba River due to similar or slightly lower levels of flow-dependent physical habitat by lifestage, similar or slightly less suitable thermal suitability conditions adult immigration and holding and juvenile downstream movement, and similar thermal suitability conditions for spawning and embryo incubation, juvenile rearing, and smoltification.
- Less suitable conditions for green sturgeon in the lower Yuba River due to higher levels of flow-dependent physical habitat for adult holding and spawning and similar thermal suitability conditions for adult immigration and holding, but less suitable thermal suitability conditions for spawning and embryo incubation and juvenile rearing and emigration, and substantially less suitable thermal suitability conditions for adult post-spawn holding.
- Overall similar conditions for lamprey in the lower Yuba River due to slightly lower levels of flow-dependent physical habitat for spawning, similar levels of flow-dependent habitat for ammocoete rearing, similar thermal suitable thermal suitability conditions for adult immigration and ammocoete rearing, and less suitable thermal suitability conditions for spawning and embryo incubation.
- Similar conditions for white sturgeon in the lower Yuba River due to similar thermal suitability conditions for adult immigration and holding.
- Similar conditions for other fish species of primary management concern in the lower Yuba River (i.e., hardhead, Central California roach, striped bass, and American shad).

Although Alternative 2 would result in substantially less preferred thermal habitat conditions for hardhead and pikeminnow in the lower portion of the 2.3-mile NBBD reach, habitat conditions in the longer 7.5-mile long upper Yuba River would be slightly more suitable. Less preferred thermal conditions for smallmouth bass in the upper Yuba River may indirectly benefit utilization and survival of hardhead, Sacramento pikeminnow and Sacramento sucker in this reach. Therefore, although the length of thermally preferred habitat could be somewhat constrained for colonization

of the 2.3-mile NBBD Reach, the substantially longer (5.8 miles) upper Yuba River upstream of Colgate as well as Englebright Reservoir would provide refuge for these species when water temperatures are less preferred during the summer and early fall in the North Yuba River.

In summary, in consideration of species-specific suitabilities across relevant reaches, adverse impacts to numerous species/lifestages would occur both upstream of Englebright Dam and in the lower Yuba River under the Cumulative Condition (Alternative 2). The Cumulative Condition (Alternative 2) results in potentially significant adverse impacts to the following fish species and guilds in the Project Area.

- Spring-run Chinook salmon in the lower Yuba River due to less suitable thermal conditions for adult immigration and holding and juvenile rearing, and substantially less suitable thermal conditions for spawning and embryo incubation.
- Green sturgeon in the lower Yuba River due to less suitable thermal suitabilities for spawning & embryo incubation and juvenile rearing & emigration, and substantially less suitable thermal suitability for adult post-spawn holding.
- Sacramento sucker in the YRDP reaches upstream of Englebright Dam due to substantial reductions in habitat availability in the Middle Yuba River and upper Yuba River.
- NBBR warmwater and coldwater fisheries and NBBR tributary fish access due to reduced reservoir storage and increased frequency of WSE fluctuations (see Section 9.5.3.2.3).

Assessment of the potential contribution from other projects26 to the adverse impacts on fisheries resources upstream of Englebright Dam and in the lower Yuba River due to Alternative 2 would be consistent with the discussion under the Proposed Projects cumulative analysis above. However, given the significant impacts to multiple fish species of management concern in both the upper Yuba River Watershed and in the lower Yuba River (including two ESA-listed fish species), the combined impacts of these projects (with Alternative 2) would substantially adversely affect fisheries resources in the Project Area. Operating to the 55% UIF component of Alternative 2 in the Yuba River Watershed would be responsible for these adverse impacts under the cumulative condition.

Assessment of impacts of other projects considered in the fisheries cumulative analysis for areas downstream of the lower Yuba River with Alternative 2 also would be consistent with the discussion under the Proposed Projects cumulative analysis above except that under Alternative 2 all managed streams in the Sacramento River Watershed could be operating to 55% UIF under the Bay-Delta Water Quality Control Plan Update. The Bay-Delta Water Quality Control Plan Update would be expected to have the most significant effect on fisheries habitat conditions downstream of the lower Yuba River relative to other cumulative projects. As described by SWRCB (2023), the proposed Plan amendments would result in the following flow changes in regulated tributaries: (1) increases during late winter and spring (February to May); (2) decreases or no changes during summer and fall (June to October); and (3) increases or no changes during winter months (November to January). SWRCB (2023, p. 7.6.2-46) further states that "higher winter and spring

[26] Lower Yuba River Accord Water Transfer Program Extension Program, YRRI, various habitat enhancement projects and other ground-disturbing projects in the lower Yuba River, USACE's Authorized Operations and Maintenance of Existing Fish Passage Facilities at Daguerre Point Dam, USACE's pending New Bullards Bar Dam and Reservoir Water Control Manual.

flows that more closely resemble the natural hydrograph to which native species have adapted would improve habitat conditions for native fish species such as Chinook salmon and steelhead. The restoration of a more natural flow regime would also have beneficial effects on natural physical and ecological processes and other habitat components that act as major stressors on native fish species, including improvements in the quality and extent of riparian, wetland, and floodplain habitat." SWRCB (2023) suggests that implementation of the narrative cold water habitat objective and the flexibility provided in the inflow requirements are expected to generally improve water temperature conditions for native fish species. However, due to some uncertainty regarding precise implementation measures for the cold water habitat objective, water temperature impacts on special-status fish species could occur associated with flow changes and reservoir storage levels (SWRCB 2023). SWRCB (2023) concludes that water temperature-related impacts on special-status fish species remain potentially significant. In its cumulative analysis, the SWRCB concluded that the proposed Bay-Delta Water Quality Control Plan Update (including the proposed Plan amendments and alternatives) when combined with other relevant projects and programs would result in a potentially significant cumulative impact to biological resources (SWRCB 2023:7.23-43).

As described above, water exiting the lower Yuba River under Alternative 2 would result in relatively low proportionate changes in Feather River and Sacramento River flows downstream of the Yuba River, but could result in some increases in water temperatures in the lower Feather River immediately downstream of the confluence with the lower Yuba River during the summer and fall, which could contribute to reduced thermal suitabilities for migratory and transient rearing lifestages of fish species in the lower Feather River (and potentially downstream).

9.6.3.3 Cumulative Condition (Alternative 2) Impact Determinations

YRDP Cumulative Impact FISH-Alt2-1: Cumulative impacts to fisheries resources in the Project Area.

Based on the analyses above, under the cumulative condition with Alternative 2, the cumulative impact to fisheries resources in the Project Area would be significant because: (1) YRDP operations under Alternative 2 would result in adverse impacts to Sacramento sucker in the YRDP reaches upstream of Englebright Dam, reservoir fisheries (coldwater fisheries, warmwater fisheries, and NBBR tributary access) in NBBR, and ESA-listed fish species in the lower Yuba River (i.e., spring-run Chinook salmon and green sturgeon); and (2) there is the potential for significant adverse impacts to fish species in areas downstream of the lower Yuba River associated with the cumulative condition with Alternative 2.

The Proposed YRDP's incremental contribution to the cumulative impact to fisheries resources in the Project Area would be cumulatively considerable because operations of the YRDP under Alternative 2: (1) would substantially adversely affect fisheries resources in YRDP reaches upstream of Englebright Dam and in NBBR; (2) would substantially affect fisheries resources in the lower Yuba River given the adverse impacts to two ESA-listed fish species; and (3) would result in warmer water temperatures of flows exiting the lower Yuba River during the summer of drier WYs, which could reduce thermal suitability for fisheries resources downstream of the lower Yuba River. Although SWRCB (2023) identifies types of potential mitigation actions to minimize impacts to fisheries resources due to the 55% UIF, it is unclear whether these types of measures

are feasible and would mitigate these impacts. Consequently, overall, YRDP operations under Alternative 2 would result in a **significant and unavoidable cumulative impact** to fisheries resources.

Narrows Cumulative Impact FISH-Alt2-1: Cumulative impacts to fisheries resources in the Project Area.

Based on the analyses above, under the cumulative condition including Alternative 2, the cumulative impact to fisheries resources in the Project Area would be significant because of the potential for significant adverse impacts to fish species in areas downstream of the lower Yuba River associated with the cumulative condition with Alternative 2.

However, the Proposed Narrows Project's incremental contribution to the cumulative impact to fisheries resources in the Project Area under Alternative 2 would not be cumulatively considerable because: (1) there would be no construction activities associated with the Narrows Project; and (2) Narrows Project operations under the cumulative condition will remain the same as under the Existing Condition. Consequently, the Proposed Narrows Project under Alternative 2 would result in a **less-than-significant cumulative impact** to fisheries resources.

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CHAPTER 10

NON-FISHERIES BIOLOGICAL RESOURCES

10.1 Introduction

This chapter describes the environmental setting and regulatory framework for non-fisheries biological resources, and it identifies direct, indirect, and cumulative impacts of the Proposed Projects and Alternatives during construction and O&M. For the purpose of this chapter, biological resources include special-status species, other wildlife, and sensitive habitats.[1] Fisheries are discussed in Chapter 9, Fisheries Resources.

10.2 Environmental Setting

This section describes the Existing Conditions of the Projects Area including vegetation, sensitive natural communities, common wildlife, and special-status species that have the potential to occur. The Projects' Area includes the Proposed Projects FERC Boundaries and affected reaches up and downstream of the Proposed YRDP Boundary. Existing Conditions are described in 3 segments, all of which are depicted in Figure 10.2-1.

- YRDP Boundary Area: The Proposed YRDP FERC Boundary, except the Narrows 2 development below Englebright Dam, and including the
  - Upper Yuba River from North Yuba River to Englebright Dam
  - North Yuba River to its confluence with Slate Creek
  - North Yuba River below New Bullards Bar Dam to confluence with Middle Yuba River
  - Oregon Creek below the Log Cabin Diversion Dam to confluence with Upper Yuba River
- Below Englebright Dam: Comprised of the following two components;
  - Narrows Project FERC Boundary and Narrows 2 development of the Proposed YRDP FERC Boundary
  - Lower Yuba River below Englebright Dam to the confluence of the Feather River
- Above YRDP: Comprised of the upstream areas including;
  - Middle Fork Yuba River
  - South Yuba River
  - Canyon Creek
  - Fordyce Creek

[1] Under CEQA, special-status species include any species listed on the federal ESA, CESA, or meeting the definition of CEQA Guidelines 15380(d). These species have been identified and assigned a status ranking by governmental agencies such as CDFW, USFWS, and non-profit organizations such as CNPS.

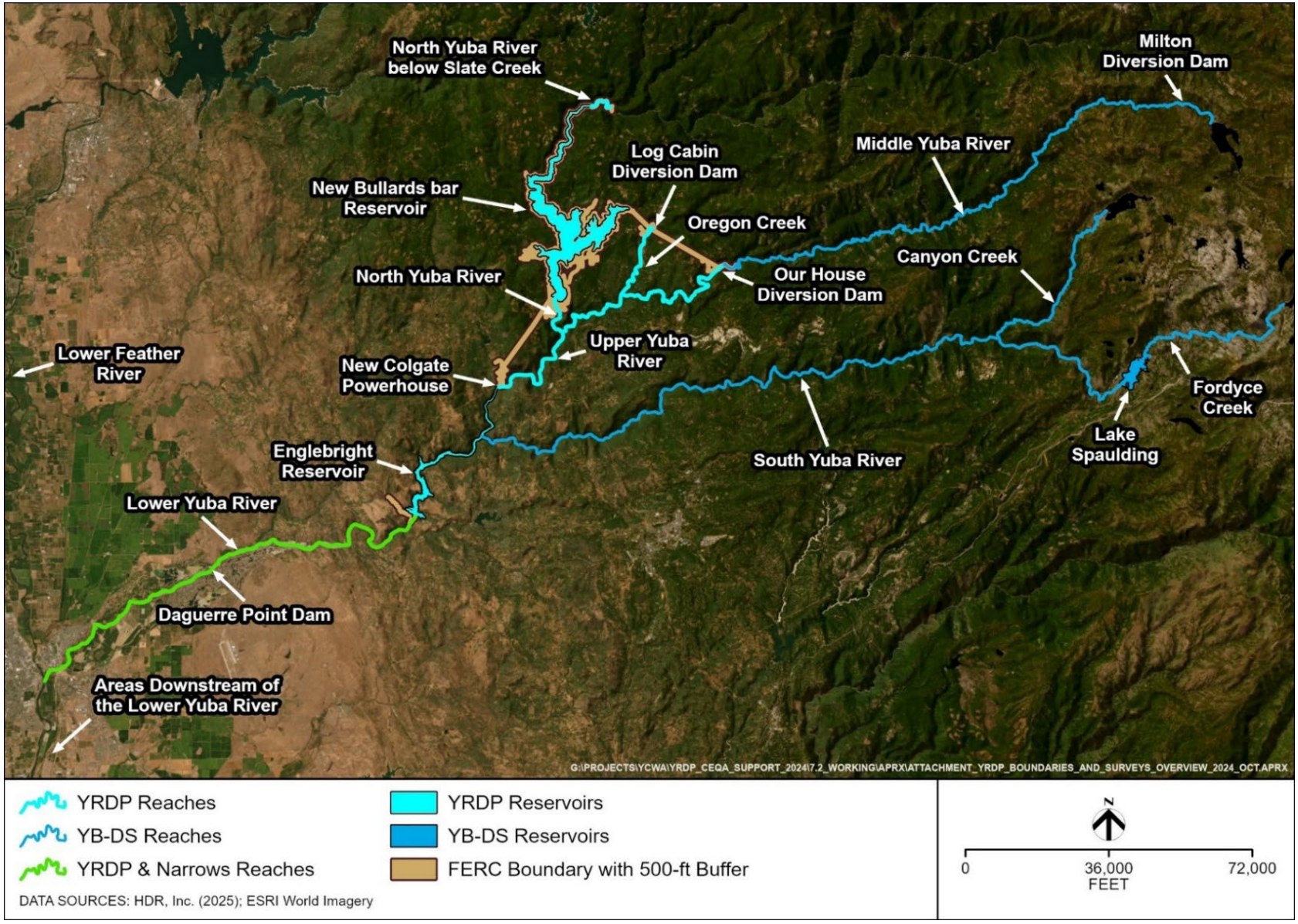

Figure 10.2-1. Map of Projects' Area.

10.2.1 YRDP Boundary Area

The YRDP Boundary Area occurs across three counties: Yuba, Sierra, and Nevada. Elevations range from 700 feet to 3,250 feet above msl. The described areas falls within the following watersheds: the lower North Yuba River (HUC-1802012504); the Middle Yuba River (HUC-1802012505); and the Yuba River (HUC-1802012510). Proposed YRDP elements are located on the main stem of the Yuba River; Middle Yuba River; North Yuba River; and Oregon Creek, a tributary to the Middle Yuba River (Figure 10.2-1).

Climatic conditions of the region, which includes the Sierra Nevada range, create flowing rivers, creeks, and streams, most of which are characterized by high-level flowing water into later summer months due to runoff associated with snowmelt. New Bullards Bar Dam is along the North Yuba River, downstream of the Tahoe National Forest. The North Yuba River combines with the Middle Yuba River downstream of New Bullards Bar Dam to form the Yuba River. The Yuba River eventually enters Harry L. Englebright Lake and continues to flow downstream from Englebright Dam to join with the Feather River, which in turn ultimately enters the Sacramento River (CDFW 2024a).

10.2.1.1 Vegetation Communities Inside the Proposed YRDP FERC Boundary

Background Information

The Existing Condition of sensitive riparian communities in the Proposed YRDP Boundary and on the reaches downstream of YRDP are considered healthy based on the distribution of plants in the channel, the richness and vigor of the plants, and the full suite of age classes of woody riparian vegetation present, including mature trees, recruits (i.e., saplings) and seedlings. White alder (*Alnus rhombifolia*) was common in all assessment sites above Englebright Reservoir, with other common woody species including red willow (*Salix laevigata*), sandbar willow (*S. exigua*), Oregon ash (*Fraxinus latifolia*), black locust (*Robinia pseudoacacia*), Fremont's cottonwood (*Populus fremontii* spp. *fremontii*), Goodding's black willow (*S. gooddingii*), arroyo willow (*S. lasiolepis*), shining willow (*S. lucida*), California button willow (*Cephalanthus occidentalis*), American dogwood (*Cornus sericea*), and Pacific madrone (*Arbutus menziesii*). Woody species cover ranges from as little as 1 percent in the North Yuba River, just upstream of the confluence with the Middle Yuba River, to 87 percent in the Middle Yuba River downstream of Our House Diversion Dam. The dominant substrate often determined the abundance of each species; lower woody species cover is associated with bedrock or boulder-dominated substrates with south-facing slopes, and higher cover was often associated with sites dominated by cobbles, gravel, and sand. The Existing Condition flows are distributed somewhat more equally throughout the year than a natural hydrograph, which may limit the extent riparian vegetation is present. Sediment and LWM is generally captured at dams, with the limited fines or LWM entering the channel transported downstream rather than contributing to the riparian system.

The North Yuba River, Middle Yuba River, and Yuba River upstream of Englebright Reservoir to the YRDP carve into steep canyons and are frequently characterized by exposed bedrock. These confined, U-shaped reaches dominated by bedrock and boulders have limited potential to support riparian vegetation. The bedrock substrate limits rooting for all vegetation, particularly for more deeply rooted trees; it also limits hydrologic connectivity to upslope areas. Because the channels

are confined, higher flows greatly increase the velocity of water compared to unconfined channels (i.e., Oregon Creek where flows can slow and spread), creating conditions to scour the channel and transport sediment and LWM. Scour lines along the bedrock banks, along with LWM and other debris, are lodged well above bankfull, indicating high flow events unrelated to Project operations (such as floods in 1986 and 1997). These events are "reset" mechanisms in these reaches, intermittently scouring vegetation and accumulated fines, and preventing long-term establishment of mature riparian forests.

In the North Yuba River, the bedrock and boulder substrates are more extreme, with nearly vertical bedrock canyon walls and giant boulders along the straight (i.e., not sinuous) channel. All vegetation below the scour-line is limited upland vegetation, occurring in small groupings (e.g., coyote mint [*Monardella villosa*], buckwheat [*Eriogonum* sp.], grasses) in pockets of sand or as individual plants growing from crevices in the bedrock (e.g., Himalayan blackberry [*Rubus americana*], western poison oak [*Toxicodendron diversilobum*], or coyote brush [*Baccharis pilularis* ssp. *consanguinea*]). Riparian vegetation primarily consists of willows along the wetted edge of pools. Both the confined nature of the channel and the lack of curves contribute to even higher velocity of flows than in the Middle Yuba River or Yuba River. Like the Middle Yuba River and Yuba River, changes in flows may contribute to better establishment and growing conditions of riparian vegetation, but the limitations of the bedrock substrate and the high velocity, scouring flows limit long-term establishment and maturity of riparian vegetation.

In the Middle Yuba River and upper Yuba River, some smaller trees and willows are present in areas where fines have accumulated, mostly on lateral bars or around pools, and there is some potential for additional establishment of riparian vegetation on higher lateral bars than is currently present. Flows above bankfull may deposit sediment or LWM to the top of lateral bars improving conditions to support vegetation and may provide for riparian germination conditions during springtime. However, the underlying substrate would still need properties to maintain hydrologic connectivity to the channel to maintain vegetation once flows recede; deposited sandy fines may drain too easily to hold moisture, although decaying organic material and LWM may contribute to more loamy, wicking soils. Therefore, changes in flows may contribute to better establishment and growing conditions of riparian vegetation, but these factors remain that could limit the extent riparian resources could expand or mature within these channels.

The Oregon Creek Celestial Valley Sub-Reach is heavily vegetated in an unconfined, low gradient channel with no distinct transition from the floodplain to upland areas. The substrates primarily consist of cobbles and fines. Woody species are present in various life stages, including extensive mature trees, recruits (i.e., saplings) and seedlings along the channel and floodplain. Upland species are present within flood-prone areas, and many areas, particularly those near roads and residences, support Himalayan blackberry, a non-native invasive plant (NNIP).

Study Information

Yuba Water mapped vegetation communities based on the Manual of California Vegetation (Sawyer et al. 2009) within the existing FERC Project Boundary for the YRDP during relicensing studies in 2012 (YCWA 2012a) which included all Project facilities and features and Project recreation areas (Appendix 10A). The printed Manual of California Vegetation has since been

updated, and the names now conform to the Manual of California Vegetation Online (referred herein as Manual) (CNPS 2024).

Additionally, new areas of the existing FERC Projects Boundary not mapped during relicensing are included herein using modeled vegetation data from VegCAMP (CDFW 2024b) where available, and from the Fire and Resource Assessment Program (FRAP) (CalFIRE 2022) in the remaining areas of the boundary. Communities were then assessed to see if any meet the definition of a special-status vegetation community, which CDFW ranks as S1,[2] S2,[3] or S3[4] per the NatureServe Heritage Program Status Ranking system (Faber-Langendoen et al. 2012). Although FRAP uses different habitat nomenclature to the Manual, the closest functional equivalent can be used to determine sensitivity of FRAP modelled habitat. Table 10.2 1. details the acres and descriptions of each habitat type.

[2] CDFW defines a S1 special-status vegetation community as "Critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors."

[3] CDFW defines a S2 special-status vegetation community as "Imperiled and at high risk of extinction or elimination due to a very restricted range, very few populations or occurrences, steep declines, or other factors."

[4] CDFW defines a S3 special-status vegetation community as "Vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors."

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Table 10.2-1. Habitats and Acreages in the YRDP Boundary Above Englebright Dam.

Habitat	Acres	Habitat Description
Annual Grasses and Forbs	2.1	This vegetation community is dominated by annual grasses such as wild oat (*Avena fatua*), red brome (*Bromus rubens*), small fescue (*Festuca microstachys*), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*). Other herb species may include long-beaked filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), wild hyacinth (*Dichelostemma multiflorum*), tidy-tips (*Layia platyglossa*), long-beaked hairy hawkbit (*Leontodon saxatilis ssp. longirostris*) and rose clover (*Trifolium hirtum*). This vegetation community is not ranked and not considered sensitive by CDFW.
Barren	38.1	Barren areas are undeveloped bare grounds devoid of plants but have not become developed hardscape. This vegetation community is not ranked and not considered sensitive by CDFW.
Black Oak-Montane Mixed Hardwood	15.5	This vegetation community is composed of a pronounced hardwood tree layer, co-dominated by canyon live oak (*Quercus chrysolepis*), ponderosa pine (*Pinus ponderosa*), and incense cedar (*Calocedrus decurrens*). The shrub layer is infrequent and poorly developed, and the herb layer is sparse. On rocky summits, canyon live oak can occur in shrub form. Snags and downed woody material generally are sparse throughout the montane hardwood habitat. This vegetation community is functionally most similar to canyon live oak woodland which is ranked as S5 which is not considered sensitive by CDFW.
Black Oak Woodland	50.0	This community is scattered throughout the slopes of New Bullards Bar Reservoir except for the eastern shore. This community is characterized by an open overstory of mature forest dominated by California black oak (*Quercus kelloggii*) with some Douglas-fir (*Pseudotsuga menziesii)*, Ponderosa pine, and canyon live oak often with a presence of tan oak (*Notholithocarpus densiflorus*), Pacific madrone, and mountain dogwood (*Cornus nuttallii*). The shrub layer is dense to patchy and is dominated by deer brush (*Ceanothus integerrimus*), western poison oak. tan oak recruits, and Himalayan blackberry. Black oak woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Black Oak Woodland / Deer Brush Chaparral	15.4	This community occurs as an association with deer brush as a dominant species in the shrub layer on a southwest facing slope of New Bullards Bar Reservoir where the reservoir starts to narrow into the north arm, as well as at Log Cabin Diversion Dam. This association is characterized by an open overstory of California black oak with some Ponderosa pine, Douglas-fir, incense cedar, canyon live oak, and tan oak. The shrub layer is dense and dominated by deer brush as well as western poison oak, viscid manzanita (*Arctostaphylos viscida*), buckbrush (*Ceanothus cuneatus*) and Himalayan blackberry. The association with deer brush is not considered a sensitive natural community.
Blue Oak Woodland	1.4	This vegetation community is dominated by blue oak (*Quercus douglasii)* in the tree canopy and sometimes co-dominated with California buckeye (*Aesculus californica)*, California juniper (*Juniperus californica*), ghost pine (*Pinus sabiniana*), and coast live oak (*Quercus agrifolia*). The shrub layer is sparse to intermittent. The herbaceous layer is sparse or grassy, and forbs are present seasonally. Blue oak woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
California Bay Woodland	0.1	California bay (*Umbellularia californica*) is dominant or co-dominant in the tree or tall shrub canopy with, but not limited to, big-leaf maple (*Acer macrophyllum*), California buckeye, white alder, red alder (*Alnus rubra*), Pacific madrone, and California hazelnut (*Corylus cornuta ssp. californica*). Tree canopy is dense and over 75 ft in height. Shrub layer is open to intermittent, herb layer is sparse to abundant. California bay woodland has a CDFW ranking of S3 and is considered a **sensitive natural community**.
Canyon Live Oak Woodland	200.7	This community occurs on the south and east facing slopes of the west shore of New Bullards Bar Reservoir and on the north facing slopes of the North Yuba River canyon. This community is characterized by an open overstory of mature forest dominated by canyon live oak with some Douglas-fir, Ponderosa pine, California black oak, tan oak, and Pacific madrone. The shrub layer is dense to patchy and is dominated by deer brush, western poison oak, tan oak recruits, viscid manzanita and Himalayan blackberry. Canyon live oak woodland has a CDFW ranking of S5 and is not considered a sensitive natural community.
Developed	0.7	This habitat type is comprised of buildings, a road, concrete, and other impervious surfaces with no plant growth. This vegetation community is not ranked and not considered sensitive by CDFW.
Douglas Fir	142.4	This community includes an overstory dominated by Douglas-fir, and includes a lower overstory of dense, sclerophyllous, broad leaved evergreen trees typically including tan oak and Pacific madrone. A small number of pole and sampling trees occur throughout stands, and on wet sites, the shrub layer is well developed, often with 100 percent cover. Cover of the herb layer under the shrubs can be up to 10 percent. Dry habitats have greater cover of shrubs and especially grasses. This vegetation community is not ranked and not considered sensitive by CDFW.
Douglas Fir – Tan Oak Forest	474.6	This community is abundant at New Bullards Bar Reservoir and occurs on the east facing slopes just north of the Cottage Creek Day Use Area and the north arm of New Bullards Bar Reservoir. The community is characterized by a dense overstory of mature trees dominated by Douglas-fir with tan oak, Ponderosa pine, sugar pine (*Pinus lambertiana*), incense cedar, California black oak, canyon live oak, Pacific madrone, and mountain dogwood. The shrub layer is patchy and dominated by deer brush, western poison oak, and tan oak recruits. Douglas fir - tan oak woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Foothill Pine Woodland	45.7	The plant community is characterized by an open overstory dominated by foothill pine with some interior live oak (*Quercus wislizeni*) and canyon live oak. The shrub layer is patchy and dominated by deer brush, western poison oak, whiteleaf manzanita (*Arctostaphylos manzanita*), and buckbrush. The plant community has an herb layer of dense to diffuse cover of annual grasses.
Fremont Cottonwood – Red Willow Forest	31.1	This community is present along the edges of the North Yuba River and Slate Creek northwest of New Bullards Bar Reservoir, the Middle Yuba River near Our House Diversion Dam, Oregon Creek near Log Cabin Diversion Dam, and the main stem Yuba River near New Colgate Powerhouse. The community is characterized by an overstory of Fremont's cottonwood. big-leaf maple, and red willow with some white alder and valley oak (*Quercus lobata*). The shrub layer is dense with various willow species *(Salix* sp.), Himalayan blackberry and California wild grape (*Vitis californica*). This community occurs as an association with red willow. Fremont cottonwood – red willow forest has a CDFW ranking of S3.2 and is considered a **sensitive natural community**.
Interior Live Oak	17.2	This vegetation community is dominated by shrubby interior live oak (*Quercus wislzeni* var. *frutescens*) in the tree canopy and can also include, but is not limited to big-leaf maple, California buckeye, Pacific madrone, tan oak, and ponderosa pine. The canopy is open to closed or savanna-like. Shrub layer is sparse to intermittent. Herb layer is sparse to intermittent or grassy. Interior live oak woodland has a CDFW ranking of 4 and is not considered sensitive natural community.
Lacustrine	4632.0	The lacustrine system is bounded by uplands or wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens. Lacustrine systems formed by damming a river channel are bounded by a contour approximating the normal spillway elevation or normal pool elevation, except where palustrine wetlands extend lakeward of that boundary. Where a river enters a lake, the extension of the lacustrine shoreline forms the riverine-lacustrine boundary (Federal Geographic Data Committee 2013). This community type is not found in the Manual and is not ranked. This community could be considered **sensitive** based on its association with Waters of the United States and/or Waters of the State.
Mixed Oak Woodland	4.1	This community was identified on a south facing slope of the north arm of New Bullards Bar Reservoir. The plant community is characterized by an open overstory of mature forest dominated by tan oak, canyon live oak, California black oak, and Pacific madrone occurring with some Ponderosa pine, and Douglas-fir. The shrub layer is patchy and dominated by viscid manzanita, toyon (*Heteromeles arbutifolia*), and deer brush with some wild mock orange (*Philadelphus lewisii)*, and western poison oak. Mixed oak woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Montane Hardwood	25.3	This vegetation community is composed of a pronounced hardwood tree layer, dominated by canyon live oak, with co-dominant tree species varying with elevation range. The shrub layer is infrequent and poorly developed, and the herb layer is sparse. On rocky summits, canyon live oak is a shrub of small diameter, usually less than 13 ft in height. Snags and downed woody material generally are sparse throughout the montane hardwood habitat. This vegetation community is functionally most similar to canyon live oak woodland which is ranked as S5 which is not considered sensitive by CDFW.

Table 10.2-1. (Continued).

Habitat	Acres	Habitat Description
Montane Hardwood-Conifer	56.9	This vegetation community includes both conifers and hardwoods, often as a closed forest. Common species include Ponderosa pine, Douglas fir, incense-cedar, California black oak, tan oak, Pacific madrone, Oregon oak (*Quercus garryana*), and other localized species. To be considered, at least one-third of the trees must be conifer and at least one-third must be broad leaved. The understory is sparse, however, considerable ground and shrub cover can occur in ecotones or following disturbance. This vegetation community has no functional equivalent in the manual. Two of the potential dominant species are tanoak and Oregon oak, which are S3 ranked communities in the Manual when they are the dominant species. Tanoak is a unique FRAP habitat itself, and as such any potential true stands of tanoak woodland would be captured in that habitat type. Oregon oak is not a FRAP habitat. Since there is no way to exclude the possibility of this community having areas dominated by Oregon oak without field verification, this community could be considered sensitive by CDFW.
Ponderosa Pine	57.0	Ponderosa pine is dominant or co-dominant in a closed to relatively closed tree canopy with, but not limited to, white fir (*Abies concolor*), incense cedar, Sierra juniper (*Juniperus grandis*), western juniper (*Juniperus occidentalis*), and tan oak. The shrub layer is open to continuous, and the herb layer is sparse, abundant, or grassy. Ponderosa pine has a CDFW ranking of S4 and is not considered a sensitive natural community.
Ponderosa Pine – Douglas Fir Forest	298.3	This community is abundant at New Bullards Bar Reservoir and occurs on the west facing slopes of New Bullards Bar Reservoir near New Bullards Bar Dam, around Moran Road Day Use Area and Boat Ramp, on a south facing slope near Garden Point Boat-in Campground, and on the north and south facing slopes of the east arm of New Bullards Bar Reservoir. The community is characterized by a dense overstory of mature forest dominated by Ponderosa pine and Douglas-fir with some tan oak, incense cedar, California black oak, shrubby interior live oak, canyon live oak, Pacific madrone, mountain dogwood, and big-leaf maple. The shrub layer is patchy in most areas and dominated by deer brush, western poison oak, and viscid manzanita. Ponderosa pine - Douglas fir forest has a CDFW ranking of S4 and is not considered a sensitive natural community.
Ponderosa Pine – Incense Cedar Forest	22.4	This community was identified on south-facing slopes of the Middle Yuba River canyon near Our House Diversion Dam. The community is characterized by a dense overstory dominated by Ponderosa pine and incense cedar with some canyon live oak, California black oak, and Pacific madrone. The shrub layer is dense and dominated by deer brush with western poison oak and viscid manzanita. Ponderosa pine – incense cedar forest has a CDFW ranking of S4 and is not considered a sensitive natural community.
Ponderosa Pine – Interior Live Oak Woodland	14.6	This community occurs along the access road to Log Cabin Diversion Dam. This community is characterized by an open overstory dominated by Ponderosa pine and shrubby interior live oak with some canyon live oak. The shrub layer is patchy and dominated by deer brush, western poison oak, viscid manzanita, and buckbrush. This community occurs as an association with shrubby interior live oak which is not formally included in the Manual. Ponderosa pine woodland has a CDFW ranking of S4 and is not considered a sensitive natural community, nor is the association with shrubby interior live oak.
Ponderosa Pine – Tan Oak Woodland	9.1	This community was identified on the west facing slopes of New Bullards Bar Reservoir north of the Garden Point Boat-in Campground. This community is characterized by an open overstory of Ponderosa pine and tan oak with some Douglas-fir, incense cedar, California black oak, canyon live oak, Pacific madrone, and mountain dogwood. The shrub layer is dominated by dense amounts of deer brush and western poison oak, as well as viscid manzanita, wild mock orange, and Himalayan blackberry. There is an abundance of snags and downed logs in this community. Ponderosa pine - tan oak woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Riverine	45.8	The riverine system is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetlands and riparian areas dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs. Riverine systems terminate at the downstream end where the concentration of ocean-derived salts in the water equals or exceeds 0.5 ppt during the period of annual average low flow, or where the channel enters a lake. It terminates at the upstream end where the tributary stream originates, or where the channel leaves a lake. Springs discharging into a channel are considered part of the Riverine system (Federal Geographic Data Committee 2013). This community type is not found in the Manual and is not ranked. This community could be considered **sensitive** based on its association with Waters of the United States and/or Waters of the State.
Sierran Mixed Conifer	42.4	This community is co-dominated by a mixture of white fir, Douglas fir, ponderosa pine, sugar pine, incense cedar, and California black oak in the tree layer. Each of these species can have relative dominance over the other depending on location, except for California black oak which is always sporadically scatted in this community. The shrub layer is variously comprised of deerbrush, manzanita (*Arctostaphylos* spp.), tanoak, gooseberry (*Ribes* spp.), rose (*Rosa* spp.), mountain misery (*Chamaebatia foliolosa*), and chinquapin (*Chrysolepis chrysophylla*). The herb layer is typically highly diverse with bromes (*Bromus* spp.), sedges (*Carex* spp.), needlegrass (*Stipa* spp.), rush (*Juncus* spp.), and lupine (*Lupinus* spp.) being commonly encountered. This community is functionally most similar to either white fir – Douglas fir forest, or ponderosa pine – incense cedar – Douglas fir forest, depending on location. Both of these have a CDFW rank of S4 and are not considered a sensitive natural community.
Tan Oak Forest	120.7	Tan oak dominated communities occur in small patches around New Bullards Bar Reservoir and are most concentrated in areas near Moran Road Day Use Area and Boat Ramp. The community is characterized by an open overstory dominated by tan oak with Ponderosa pine, Douglas-fir, incense cedar, California black oak, canyon live oak, Pacific madrone, and mountain dogwood, and sometimes, sugar pine. The dense shrub layer is dominated by tan oak recruits and deer brush with western poison oak and viscid manzanita. Tan oak forest has a CDFW ranking of S3.2 and is considered a **sensitive natural community**.
Valley Oak, Riparian Mixed Hardwood	1.1	This vegetation community is dominated by valley oak in the tree canopy and sometimes co-dominated with box elder (*Acer negundo*), white alder, Oregon ash (*Fraxinus latifolia*), canyon live oak, shrubby interior live oak, Goodding's black willow, red willow and/or arroyo willow (*Salix lasiolepis*). The understory is characterized by riparian species including California pipevine (*Aristolochia californica*), Santa Barbara sedge (*Carex barbarae*), skunk brush (*Rhus aromatica*), California rose (*Rosa californica*), Himalayan blackberry, California blackberry (*Rubus ursinus*), and California wild grape. The tree canopy can be open to closed. The shrub layer is open to closed. The herbaceous layer may be grassy. Valley oak riparian forest and woodland has a CDFW ranking of S3 and is considered a **sensitive natural community**, which is the closest analog to valley oak, riparian mixed hardwood.
Whiteleaf Manzanita Chaparral	8.9	This vegetation community is dominated by viscid manzanita with plant associates such as chamise (*Adenostoma fasciculatum)*, alnus-leaved service-berry (*Amelanchier alnifolia*), Indian manzanita (*Arctostaphylos mewukka*), Ione manzanita (*Arctostaphylos myrtifolia*), greenleaf manzanita (*Arctostaphylos patula ssp. patula*), mountain whitethorn (*Ceanothus cordulatus*), buckbrush, deer brush, velvety California lilac (*Ceanothus velutinus*), Fremont silk tassel bush (*Garrya fremontii*), oceanspray (*Holodiscus discolor*) and scrub oak (*Quercus berberidifolia*). Emergent trees may be present at low cover, including knobcone pine (*Pinus attenuata*), ponderosa pine, ghost pine or Douglas-fir. Whiteleaf manzanita chaparral has a CDFW ranking of S4 and is not considered a sensitive natural community.
Total acreage	**6,373.6**	

10.2.1.2 Vegetation Communities Outside of the YRDP Boundary

Project flows below the YRDP dams can impact riparian corridors along the Yuba River and its tributaries. Detailed information about vegetation conditions in the riparian corridors above Englebright Dam outside of YRDP boundary that could potentially be affected by the YRDP can be found in the Riparian Habitat Upstream of Englebright Reservoir Technical Memorandum (YCWA 2014a), from which the following information is obtained.

Components of the riparian corridor upstream of Englebright Dam and outside of YRDP boundary include:

- Oregon Creek from Log Cabin Dam to the confluence of the Middle Yuba River.
- Middle Yuba River to the confluence with the mainstem of the Yuba River.
- North Yuba River from the New Bullards Bar Dam to the confluence with the mainstem of the Yuba River.
- Yuba River from the intersection with Middle and North Yuba River to Englebright Reservoir.

The Oregon Creek component is dominated in the tree layer by white alder, willow species, Oregon ash, and some occurrences of American dogwood. The shrub layer is generally dominated by Himalayan blackberry with some clusters of California wild grape, and the herb layer has moderate cover of a variety of species. Adjacent upland species contribute to the corridor based on the unconfined nature of the stream system, which includes incense cedar, Ponderosa pine, Douglas fir, and California black oak in the tree layer.

The Middle Yuba River is dominated by exposed bedrock banks, boulders and cobble. Vegetation present includes red willow, white alder, and American dogwood in the tree layer, with Himalayan blackberry being common in the shrub layer and some occurrences of California wild grape. Common herb species include torrent sedge (*Carex nudata*), upright hedge-nettle (*Stachys stricta*), narrow-tip panicgrass (*Panicum acuminatum*), red-dotted monkeyflower (*Erythranthe guttata*), mugwort (*Artemisia douglasiana*), and acidic dock (*Rumex acetosella*).

The North Yuba River is dominated by boulders and bedrock primarily, with some emergent vegetation present. This vegetation consists of Arroyo willow, Hinds' willow (*Salix exigua* var. *hindsiana*), white alder, California brickellbush (*Brickellia californica*), Himalayan blackberry, fringed willowherb (*Epilobium ciliatum*), and horseweed (*Erigeron canadensis*).

The Yuba River component is dominated by gravel, boulders, and exposed bedrock. Common species in the tree layer include Goodding's black willow, Oregon ash, red willow, Hinds' willow, and white alder. The shrub layer generally contains California brickellbush, Scotch broom (*Cytisus scoparius*), and Himalayan blackberry. The herb layer contains numerous species that include white sweetclover (*Melilotus albus*), English plantain (*Plantago lanceolata*), California fuchsia (*Epilobium canum*), and common self-heal (*Prunella vulgaris*).

10.2.1.3 Sensitive Natural Communities Within the Proposed YRDP FERC Boundary

Sensitive vegetation communities/habitats are those identified in local or regional plans, policies, or regulations, or by CDFW or USFWS. CDFW's Rarity Ranking follows NatureServe's Heritage Methodology (Faber-Langendoen, et al. 2012) in which communities are given a G (Global) and S (State) rank ranging from 1 (very rare and threatened) to 5 (demonstrably secure). Natural Communities with ranks of S1-S3 are considered Sensitive Natural Communities. Other sensitive habitats include riparian communities and Waters of the U.S. and of the State, including wetlands.

There are four sensitive vegetation communities noted in Table 10.2-1: California bay woodland, Fremont cottonwood – red willow forest, tan oak forest, and valley oak riparian mixed hardwood. All of them are ranked S3, which stands for Vulnerable worldwide/statewide. There are 0.1-acre of California bay woodland, 31.1 acres of Fremont cottonwood – red willow forest, 120.7 acres of tan oak forest, and 1.1 acres of valley oak riparian mixed hardwood. Additionally, other vegetation discussed above in Section 10.2.1.2 would be considered sensitive as it is associated with Waters of the United States and/or Waters of the State and occurs in riparian areas.

Appendix 10B includes a map of all sensitive natural communities in the Proposed YRDP FERC Boundary.

10.2.1.4 Federally Protected Wetlands/Waters of the United States Within the Proposed YRDP FERC Boundary

To identify wetlands potentially occurring within the Project Area above Englebright Dam, publicly available data (USFWS' NWI maps (USFWS 2024a), National Hydrography Dataset (NHD) (NRCS 2024), current and historical aerial imagery (Google Earth 2024), and the wetlands study performed in 2012 by Yuba Water for the YRDP (YCWA 2012) were reviewed. These mapped wetlands are detailed below in Table 10.2-2 and delineated in Appendix 10C.

Field studies conducted by Yuba Water in March-July 2012 covered approximately 1,936 acres to identify any wetlands within the existing FERC YRDP Boundary. The survey area included the existing YRDP Boundary, plus an additional 100 feet extending upslope from the normal maximum water surface elevation of Project reservoirs and impoundments and from the FERC Project Boundary, with a focus on locations mapped by NWI. The majority of the FERC Project Boundary was surveyed, but approximately 1,159 acres were not surveyed due to unsafe terrain. An additional 3.3 acres surrounding a known bald eagle (*Haliaeetus leucocephalus)* nest were excluded. The survey results did not find any wetlands within the FERC Project Boundary and concluded that the steep terrain was unlikely to support wetland conditions.

Except for a 0.15-acre freshwater pond along Oregon Creek in Celestial Valley, all the NWI-mapped wetlands along the affected reaches downstream of the YRDP to Englebright Reservoir are riverine. The riverine wetlands are within the river channel and overlapping floodplains. The freshwater pond is mapped as artificially flooded and not connected to the hydrography of Oregon Creek. Specifically, the NWI modeled the wetland as Palustrine, Unconsolidated Bottom, Artificially Flooded (PUBK). This means it is a non-tidal wetland, dominated by trees, shrubs, or persistent emergent vegetation with less than 30% cover, with at least 25% cover of particulates

smaller than stones, and water levels controlled by human activities (USFWS 2024a). Table 10.2-2 below summarizes the acreage and type of wetlands found in the Proposed Projects Boundary.

Table 10.2-2. Mapped NWI Wetlands within the Proposed YRDP Boundary.

Type	Definition	Acres
Lacustrine Limnetic	Includes all habitats in which a lake or other body of open water with no more than 30 percent vegetation cover and is greater than 8.2 feet deep.	3,925.4
Palustrine Forested	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of woody plants that are at least 20 feet tall.	3.2
Palustrine Scrub-Shrub	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of woody plants that are less than 20 feet tall.	0.1
Palustrine	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. This form of palustrine is used for areas that are less homogenously vegetated as those above.	5.0
Perennial Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing the entire year.	36.4
Intermittent Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing part of the year. If water is not flowing it may remain in isolated pools or surface water may be absent.	7.1
Unknown Riverine	Includes all wetlands and habitats contained within a channel that has an unknown flow duration.	15.8
	Total	**3,993.0**

Source of definitions: Federal Geographic Data Committee. 2013.

In addition to wetlands, Yuba Water reviewed publicly available NHD data to identify other Waters of the United States within the Proposed YRDP Boundary. Table 10.2-3 below lists the number of identified NHD streams located above Englebright Dam and within the Proposed YRDP Boundary. Named creeks include Mississippi Creek, Burnt Bridge Creek, Willow Creek, Oregon Creek, Little Oregon Creek, Middle Yuba River, North Yuba River, Bridger Creek, Indian Creek, Slate Creek, Empire Creek, Lost Creek, Grizzley Creek, Schoolhouse Creek, Mill Creek, Hampshire Creek, and Deadwood Creek.

Table 10.2-3. Stream Types and Lengths Present in the Proposed YRDP Boundary.

Stream Type	Length (miles)
Ephemeral	15.59
Intermittent	3.94
Perennial	3.36

10.2.1.5 Federally Protected Wetlands/Waters of the United States in Affected Reaches Outside the Proposed YRDP FERC Boundary

There are approximately 908.0 acres of mapped NWI wetlands within the reaches outside of the YRDP Boundary (Table 10.2-4). Yuba Water has not conducted field studies to ground truth this data.

Except for Englebright Reservoir, all the NWI-mapped wetlands along the affected reaches outside the YRDP boundary are riverine.

Table 10.2-4. Mapped NWI Wetlands outside the Proposed YRDP Boundary

Type	Definition	Acres
Lacustrine Limnetic	Includes all habitats in which a lake or other body of open water with no more than 30 percent vegetation cover and is greater than 8.2 feet deep.	752.4
Perennial Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing the entire year.	155.6
	Total	**908.0**

Source of definitions: Federal Geographic Data Committee 2013.

10.2.1.6 Wildlife Movement Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to: (1) sustain species with specific foraging requirements; (2) preserve a species' distribution potential; and (3) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife movement corridors to be a sensitive resource.

Available data on existing movement corridors and linkages was accessed on March 21, 2025, via the CDFW BIOS 6 Viewer (CDFW 2025a). Data reviewed included the Essential Connectivity Areas layer [ds620], the Natural Landscape Blocks layer [ds621], and the Missing Linkages in California layer [ds420]. These layers together highlight and show natural habitat blocks that support biodiversity (Natural Landscape Blocks [NLB]) and areas that are essential for the ecological connectivity between them (Essential Connectivity Areas [ECA]) as well as linkages that may be at risk (Missing Linkages in California).

There are 850 intact NLBs connected by 192 ECAs that connect at least two NLBs. While these areas are identified to be important to ecological diversity and integrity, areas that are not identified should not be discounted in their role to ecological connectivity or in their importance to wildlife populations or movements. There is a large NLB that covers the area to the west of the YRDP, along the Yuba River below New Bullards Bar Dam, all the way to Englebright Reservoir, and above New Bullards Bar Dam to the east of the YRDP boundary. An ECA passes through the Yuba River and the upper part of Englebright Reservoir.

There are no Landscape Linkages identified in the area above Englebright Reservoir to the YRDP. The migration corridor for the Downieville-Nevada City mule deer (*Odocoileus hemionus californicus*) herd [ds2973] runs through the Proposed YRDP boundary at Our House Diversion Dam on the Middle Yuba River to their winter range in the area (CDFW 2025a).

10.2.1.7 Critical Habitat in the Proposed YRDP Boundary

There is approximately 101.4 acres of critical habitat designated by USFWS for the California red-legged frog (CRLF, *Rana draytonii*) in the Proposed YRDP Boundary surrounding Moran Cove, as well as within the 500-foot buffer.

10.2.1.8 Special-Status Species

Special-status species include those that are endangered due to imminent possibility of extinction in the wild and those that are rare due to small numbers throughout their range. As such, any

negative impacts to a species that is rare due to small numbers (or its habitat) that could make them endangered or put them in a position where they are likely to become endangered throughout all or most of the species' range would also designate them as special-status species. Some common threats to a species or population include habitat loss, degradation, and fragmentation, as well as human conflict and intrusion.

For the purposes of this DEIR, special-status species are defined as any species that is granted status by a federal, State, or local agency. This includes the following:

- Listed, proposed, or candidates for listing under the federal ESA (C.F.R. § 17.11 – listed; 61 Federal Register 7591, February 28, 1996, candidates)
- Listed or proposed for listing under CESA (F.G.C. 1992 § 2050 et seq.; 14 California Code of Regulations (C.C.R.) § 670.1 et seq.)
- Designated as a Species of Special Concern (SSC) by the CDFW
- Designated as Fully Protected (FP) by the CDFW (F.G.C. §§ 3511, 4700, 5050, 5515)
- Species that meet the definition of rare or endangered under CEQA (14 C.C.R. § 15380) including California Rare Plant Rank (CRPR) 1A, 1B, 2A, and 2B
- Species designated as Forest Service sensitive (FSS) for the PNF and TNF where they occur on NFS lands, including Watch List plants

From 2011 to 2014, Yuba Water completed field studies in support of the FERC YRDP relicensing, including multiple studies assessing and inventorying non-fisheries biological resources. These biological resource studies included:

- Aquatic Macroinvertebrates Above Englebright
- Special-Status Aquatic Mollusks
- Special-Status Amphibians – Foothill Yellow-Legged Frog (FYLF)
- ESA-listed Amphibians – California Red-Legged Frog (CRLF)
- Turtle – Western Pond Turtle
- Special-Status Wildlife – California Wildlife Habitat Relationships (CWHR) and Bats
- ESA-Listed Wildlife – Valley Elderberry Longhorn Beetle
- CESA and Fully Protected Wildlife – CWHR and Bald Eagle
- Riparian Habitat Above Englebright
- Wetlands
- Special-Status, ESA-Listed, and CESA-Listed Plants

Biological information gathered during these field studies was considered when defining the environmental setting for the Proposed YRDP. Results of these studies can be found in the AFLA (FERC 2019).

On May 20, 2025, the USFWS' Information for Planning and Consultation (IPaC) database was queried to update the list of federally listed species and critical habitats that have the potential to be affected by the Proposed Projects (USFWS 2025). A query of the CDFW's California Natural Diversity Database (CNDDB) on May 20, 2025, provided an updated list of processed and unprocessed occurrences for special-status species in USGS 7.5-minute quadrangles within the YRDP vicinity: Alleghany, Camptonville, Challenge, Clipper Mills, Downieville, Forbestown, French Corral, Goodyears Bar, Nevada City, North Bloomfield, Oregon House, Pike, Rackerby, Strawberry Valley, and Washington, California (CDFW 2025a). In addition, the California Native Plant Society (CNPS) database was queried to identify special-status plant species with the potential to occur in the aforementioned USGS quadrangles. Lastly, the sensitive species lists maintained by the NFS were reviewed to identify any plant and wildlife species that are recognized as FSS. Raw data from the database queries are provided in Appendix 10D, except for the CNDDB RareFind 5 results, as they are not available for public distribution.

Additionally, Yuba Water supplemented the DEIR with data gathered during activities related to the *Log Cabin and Our House Diversion Dams Sediment Management Plan*, (*Sediment Management Plan*) updated 2018, upgrades to multiple recreation facilities, and development of a Dreissenid Mussel Prevention Plan for Yuba Water's reservoirs.

The queries, Yuba Water's Project activities and studies identified special-status species known or with the potential to occur in or adjacent to the Proposed Projects. Appendix 10E describes the habitat requirements for each of these species and the potential for each species to occur within the Project Area. In cases where a determination was made that no suitable habitat for a given species existed or the Proposed Projects are outside the known range of a given species, the species is not further analyzed in this document.[5] Conversely, when information about the presence of a particular special-status species was unknown, but suitable habitat was present, the potential presence of the species was assumed and further analysis was conducted.

Special-status species are further discussed below in Section 10.5, Environmental Impact Analysis, in three groups:

(1) those species listed under the federal ESA;

(2) those species listed under CESA or as fully protected under CFGC; and

(3) all other special-status species, including those listed by the CDFW as SSC, the Forest Service as FSS, and CNPS rare plant rankings.

Table 10.2-5 provides a summary of potential species, their listings, associated habitats, nearest documented occurrences for each species in relation to the Proposed Projects.

[5] For the purpose of this section, habitat is suitable for a given species if a) the species is known to utilize the habitat and/or b) a habitat has sufficient resources required for any necessary species' life stage activity (e.g., foraging, nesting, shelter).

Table 10.2-5. Special-Status Species Known or With the Potential to Occur Within the Proposed FERC Boundary Above Englebright and Associated Potential Habitat.

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
PLANTS			
Green shield-moss *Buxbaumia viridis*	FSS-P CRPR 2B.2	Habitat includes fallen, decorticated wood or humus in coniferous forest, and elevations of 3,200-7,220 feet (CNPS 2025).	The closest known occurrence from 05/12/2005 is approximately 3.3 miles to the NE of the New Bullards Bar Reservoir, along Brush Creek (CDFW 2025a).
Sierra arching sedge *Carex cyrtostachya*	PNF WL, TNF WL CRPR1B.2	Habitat includes mesic lower montane coniferous forests, meadows, seeps, and the margins of riparian forests, within elevations of 2,000-4,460 feet (CNPS 2025).	The closest known occurrence from 08/26/2014 is located 0.1-mile west of the proposed Shadow Ridge Campground along Oregon Hill Road (CDFW 2025a).
white-stemmed clarkia *Clarkia gracilis ssp. albicaulis*	FSS-P CRPR 1B.2	Habitat includes serpentine soils in chaparral, cismontane woodland, and lower montane coniferous forest. Elevations range from 1,440-3,560 feet (CNPS 2025).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
Mosquin's clarkia *Clarkia mosquinii*	FSS-P CRPR 1B.1	Habitat includes rocky soils and roadsides in cismontane woodlands and lower montane coniferous forests, and an elevation range of 605 to 4,890 feet (CNPS 2025).	The closest known occurrence from 08/23/2016 is located 3 miles NW of the New Bullards Bar Reservoir, north of Challenge (CDFW 2025a).
Clustered lady's-slipper *Cypripedium fasciculatum*	FSS-P FSS-T	Prefers mesic to moist, shady conifer forest in elevations ranging from 330 to 6,565 feet (CNPS 2025).	Known from the YRDP. Found adjacent to the Bullards Bar Trail on TNF lands (FEIRC2019).
fern-leaved monkeyflower *Erythranthe filicifolia*	PNF WL CRPR 1B.2	Usually habitat includes slow-draining ephemeral seeps that are among exfoliating granitic slabs in meadows, chaparral, lower montane coniferous forest. Elevations range from 1360-5610 (CNPS 2025).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
Minute pocket moss *Fissidens pauperculus*	FSS-P TNF WL CRPR 1B.2	Habitat includes damp soils in north coast coniferous forest, within elevations of 30–3,360 feet (CNPS 2025).	Known from the YRDP. Found at the proposed Shadow Ridge Campground in 2010 (CDFW 2025a).
Butte County fritillary *Fritillaria eastwoodiae*	FSS-P FSS-T	Generally occurs in dry benches and slopes at elevations less than 5,000 feet. Habitats include serpentine soils in chaparral, cismontane woodland, and lower montane coniferous forest (CNPS 2025).	Known from the YRDP. Found on a cliff face adjacent to the New Bullards Bar Dam access road and on a cliff-like cut bank adjacent to Forest Service Road 0008-010 (FERC 2019).
Cantelow's lewisia *Lewisia cantelovii*	FSS-P FSS-T CRPR 1B.2	Habitat includes granite cliff faces and rocky outcrops, often associated with seeps in chaparral woodlands or conifer forests at elevations ranging from 1,260 to 4,495 feet. Soil requirements include mesic and granitic soils (CNPS 2025).	Known from the YRDP. Found growing on steep rocky cliffs in habitat dominated by canyon live oak and some Douglas fir in the northern arm of the New Bullards Bar Reservoir. Six are on TNF lands and 7 on Yuba Water lands (FERC 2019).
Hutchison's lewisia *Lewisia kelloggii ssp. hutchisonii*	FSS-P FSS-T	Habitat includes slate soils or sometimes rhyolite tuff in openings and ridgetops of upper montane coniferous forest. Elevation ranges from 2,505–7,760 feet (CNPS 2025).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
Humboldt's lily *Lilium humboldtii ssp. humboldtii*	PNF WL TNF WL	Generally occurs in chaparral woodlands and pine forests at elevations ranging from 650 to 3,610 feet (CNPS 2025).	Known from the YRDP. Found growing either adjacent to roads or near pedestrian trails, in and around campgrounds in Douglas fir and Ponderosa pine dominated habitat. 26 occurrences within the YRDP boundary, including 10 on TNF, 5 on PNF, 7 on Yuba Water lands and 4 on private lands (FERC 2019).
Inundated bog club-moss *Lycopodiella inundata*	TNF WL CRPR 2B.2	Habitat includes coastal bogs and fens, mesic lower montane coniferous forest, and lake margins of swamps and marshes, in an elevation range of 15–3,280 feet (CNPS 2025).	The closest known occurrence from 12/22/1991 is located approximately 2.75 miles south of Our House Diversion Dam within the east pit of North Columbia Diggins (CDFW 2025a).
Elongate copper moss *Mielichhoferia elongate*	FSS-P FSS-T	Habitat includes roadsides, chaparral, meadows, seeps, cismontane woodland, broadleafed upland and lower montane coniferous forests. Elevation ranges include 3,490-4,595 feet (CNPS 2025).	The closest known occurrence is located in Shady Creek between Nevada City and North San Juan, approximately 3.75 miles east of the New Colegate Powerhouse (CDFW 2025a).
Shevock's copper moss *Mielichoferia shevockii*	CRPR 1B.2	Habitat includes mesic and metamorphic rocky soils in cismontane woodland, within an elevation range of 2,460-4,595 feet (Sawyer et al. 2009).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
olive phaeocollybia *Phaeocollybia olivacea*	FSS-P FSS-T	Occurs in mixed conifer forests in scattered to densely sprawling large rings (CNPS 2025).	Known from the YRDP. Found on the southeast shore of New Bullards Bar Reservoir, and in Hornswoggle Group and Schoolhouse Campgrounds. Vegetation in these habitats is dominated by an overstory of Ponderosa pine and Douglas fir. There are 3 occurrences on TNF, 1 on Yuba Water lands and one on private lands (FERC 2019).

Table 10.2-5. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
Sierra blue grass *Poa sierrae*	FSS-P FSS-T CRPR 1B.3	Habitat includes openings in lower montane coniferous forest and in elevations of 1,195 to 4,920 feet (CNPS 2025).	There are no known occurrences within 5 miles of the YRDP. The closest known occurrence from May 2023 is located approximately 10 miles north near Fall River Campground (CDFW 2025a).
sticky pyrrocoma *Pyrrocoma lucida*	FSS-P FSS-T CRPR 1B.2	Habitat includes alkaline clay soils in lower montane coniferous forest, meadows and seeps, at elevations of 2,295-6,400 feet (CNPS 2025).	The closest and most recent known occurrence is from a 1935 Smith Collection near Highway 49 (CDFW 2025a).
brownish beaked-rush *Rhynchospora capitellata*	WL-P CRPR 2B.2	Habitat includes mesic soils in meadows, seeps, and montane coniferous forests, at elevations of 145-6,560 feet (CNPS 2025).	The closest known occurrence from 2004 is located south of Tuscan Way Road, approximately 0.9-mile north of the norther portion of New Bullards Bar Reservoir (CDFW 2025a).
Rocky Mountain bulrush *Schoenoplectiella saximontana*	CRPR 2B.1	Margins of marshes and swamps, vernal pools. Elevation 150 – 2,360 feet. Blooming period: June – September (CNPS 2025).	There are no known occurrences within 5 miles of the Project area (CDFW 2025a).
Siskiyou jellyskin lichen *Scytinium siskiyouense*	CRPR 1B.1	Epiphytic, usually on the bark of Fagaceae, in lower montane and North Coast Coniferous Forests at elevations of 2,085-4,790 feet (CNPS 2025).	The closest known occurrence from 2003 is located approximately 3.2 miles NW of the norther portion of New Bullards Bar Reservoir (CDFW 2025a).
True's mountain jewelflower *Streptanthus tortuosus* ssp. *truei*	CRPR 1B.1 TNF WL	Habitat requirements include partial shade on steep rocky slopes in lower montane coniferous forests, at elevations of 2,505-2,820 feet (CNPS 2025).	The closest known occurrence from 2023 is located 1 mile NE of the end of the Lohman Ridge Diversion Tunnel – south of the Middle Yuba River (CDFW 2025a).
oval-leafed viburnum *Viburnum ellipticum*	CRPR 2B.3	Habitat includes chaparral, cismontane woodland, lower montane coniferous forest in elevations of 705–4,595 feet (CNPS 2025).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
INVERTEBRATES			
Western bumblebee *Bombus occidentalis*	SCE, FSS-P, FSS-T	Habitat includes grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Typically nests underground in abandoned rodent burrows (Xerces 2023), such as old squirrel or other animal nests, and in open west-southwest slopes bordered by trees. Range occurs along the West Coast and Mountain West of North America, from Arizona, New Mexico and Mediterranean California, north through the Pacific Northwest and Tundra/Taiga region to Alaska. Eastward, the distribution stretches to the northwestern Great Plains and southern Saskatchewan (Hatfield et al. 2015).	The closest and most recent known occurrence was a 1931 collection within Strawberry Valley, approximately 1.35 miles north of the northern part of New Bullards Bar Reservoir (CDFW 2025a).
Monarch butterfly *Danaus plexippus*	FPT	Habitat requirements include milkweed host plant for larval stages and oviposition. A variety of trees may be used during migration periods (USFWS 2020).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a). Historic occurrences of milkweed just outside of the YRDP FERC boundary, southeast of Camptonville, are present, and there is potential for monarch to occur wherever milkweed occurrences exist, though none have been identified within the Projects Area (USFWS 2020).
AMPHIBIANS			
foothill yellow-legged frog *Rana boylii* pop. 3 – North Sierra Distinct Population Segment (DPS)	ST FSS-P FSS-T BLM-S	This DPS is in Yuba, Sierra, Nevada, and Placer counties (USFWS 2021). Generally found in shallow flowing streams and rivers with at least cobble sized substrate. Breeding generally occurs at the margins of wide shallow channels with reduced flow variation near tributary confluences. Specifically, egg masses are placed in low flow locations on or under rocks with preferred substrates being boulders, cobbles, or gravel. Eggs have been found at depths to 34 in. in water velocities of 0 - 0.69 feet per second and at most 40 feet from shore. Maximum water temperature for breeding is 79ºF and 48 to 70ºF is the preferred range. Tadpoles avoid areas below 55ºF and prefer temperatures between 62ºF and 72ºF (Thomson et al. 2016).	Known from the YRDP. Found at Log Cabin and Our House Diversion Dam impoundments, as well as downstream and upstream on Oregon Creek and the Middle Yuba River. Thousands of individuals documented at the Log Cabin and Our House Diversion Dam Impoundments during Yuba Water's sediment management activities in 2014, 2017 and 2020. FYLF populations also occur in the YRDP-affected reaches of Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam, but established FYLF populations likely do not occur in the North Yuba River downstream of New Bullards Bar Dam or in the Yuba River (FERC 2019).
California red-legged frog *Rana draytonii*	FT SSC	Slow moving and shallow water with gradients up to 21.0 percent can support breeding. Upland habitat contains dense riparian vegetation, woody or rock debris, burrows, or other cover within 100 meters of breeding or non-breeding aquatic habitat (USFWS 2022a).	Critical habitat present within the YRDP on the Little Oregon Creek arm of New Bullards Bar Reservoir surrounding Moran Cove (FERC 2019). The closest known occurrence from 10/6/2000 is located approximately 2.5 miles west of the YRDP along Little Oregon Creek, where 6 adults were observed (CDFW 2025a).

Table 10.2-5. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
REPTILES			
Northwestern pond turtle *Actinemys marmorata*	FPT SSC FSS-P FSS-T	Occurs in various water bodies including permanent and ephemeral systems either natural or artificial, and permanent ponds, lakes, backwaters and other aquatic habitats with warm, shallow water with cover for hatchlings. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation. (Thomson et al. 2016).	Known from the YRDP. Found on New Bullards Bar Reservoir. Also captured at Our House Diversion Dam impoundments during sediment management activities (FERC 2019). There is one occurrence of northwestern pond turtle in the CNDDB record that is hydrologically connected to the riparian corridor upstream of Englebright Dam in the South Yuba River (Occurrence #1263, CDFW 2025a). There is also one occurrence reported on iNaturalist on the Yuba River upstream of Englebright Dam from 2022 (iNaturalist 2022).
coast horned lizard *Phrynosoma blainvillii*	SSC	Habitat is sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Also use logs, rocks and existing burrows/crevices for burrows (Thomson et al. 2016).	There are no known occurrences located within 5 miles of the YRDP. The closest known occurrence is located northwest of Bangor (CDFW 2025a).
BIRDS			
American goshawk *Accipiter atricapillus (=gentalis)*	SSC FSS-PNF FSS- TNF	Habitat includes lodgepole pine (*Pinus contorta* spp. *murrayana*), red fir (*Abies magnifica*), mountain hemlock (*Tsuga mertensiana*), white pine (*Pinus monticola*) and mixed conifer dominated forest. Suitable nesting and foraging requires areas with adequate prey, and the ability to nest in mature and old growth forest stands (CWHR 2005a).	Known from the YRDP. Found at New Bullards Bar Reservoir at Slate Creek within a Protected Activity Center (FERC 2019).
golden eagle *Aquila chrysaetos*	BGEPA, FP	Habitat includes water deep enough to produce submersed aquatic vegetation, which is an important food source. During migration, large flocks gather in large bodies of water, including lakes, reservoirs, and shallow wetlands. (CWHR 1990a).	Known from the YRDP. Found three occurrences at New Bullards Bar Reservoir (FERC 2019).
long-eared owl *Asio otus*	SSC	Occurs in deciduous and evergreen forests, orchards, wooded parks, farm woodlots, river woods, desert oases. Wooded areas with dense vegetation needed for roosting and nesting, open areas for hunting (FERC 2019).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
Vaux's swift *Chaetura vauxi*	SSC	Found in mature forests but also forages and migrates over open country (FERC 2019).	There are no known occurrences within 5 miles of the YRDP a (CDFW 2025a).
Northern harrier *Circus cyaneus*	SSC	Suitable habitat for this species includes meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands (Zeiner et al. 1988 – 1990).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
olive-sided flycatcher *Contopus cooperi*	SSC	Habitat includes western coniferous forests, from sea-level to over 10,000 feet elevation in some parts of the Rockies. (Cornell 2015).	Observed at a willow revegetation site in 2021 along Oregon Creek a few miles downstream of Log Cabin Diversion Dam during Yuba Water sediment management activities.
black swift *Cypseloides niger*	SSC	Breeding sites are very specific: behind or beside permanent or semi-permanent waterfalls, on perpendicular cliffs near water and in sea caves. Breeds very locally in the Sierra Nevada and Cascade Ranges, the San Gabriel, San Bernardino, and San Jacinto Mountains, and in coastal bluffs and mountains from San Mateo County south to San Luis Obispo County (Shuford and Gardali 2008).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
little willow flycatcher *Empidonax traillii brewsteri*	SE FSS-P FSS-T	Suitable habitat includes wet meadows during the summer and montane riparian habitats from 2,000 to 8,000 feet in elevation in the Sierra Nevada and Cascade Ranges. They are most numerous where extensive thickets of low, dense willows (*Salix* spp.) edge on wet meadows, ponds, or backwaters (NatureServe, 2017).	Observed at a willow revegetation site in 2021 along Oregon Creek a few miles downstream of Log Cabin Diversion Dam during Yuba Water's sediment management activities.
American peregrine falcon *Falco peregrinus anatum*	FSS-T	Breeds near wetlands, lakes, rivers, or other waters on cliffs, banks, dunes or mounds, mostly in woodland, forest, and coastal habitats. Nest is a scrape on a depression or ledge in an open site (CWHR 1990b).	Known from the YRDP. Found in a hole in New Bullards Bar Dam covered, which was likely used for nesting by a pair of falcons in the past. Multiple observations during and since relicensing studies at New Bullards Bar Reservoir (FERC 2019).
bald eagle *Haliaeetus leucocephalus*	BGEPA SE, FP, FSS-P, FSS-T	Suitable habitat includes large, old-growth, or dominant live trees with open branchwork, especially ponderosa pine. Requires large bodies of water or rivers with abundant fish, and adjacent snags (CWHR 1999a).	Known from the YRDP. Found at New Bullards Bar Reservoir and downstream of New Colgate Powerhouse. 28 occurrences, including 3-night roosts and 11 hunting perches, during 3 wintering surveys (2011–2012). Two nests were also located on New Bullards Bar Reservoir during relicensing studies (FERC 2019). They have also been sighted on New Bullards Bar multiple times over the past 10 years, including most recently in April 2025 (Cornell Lab of Ornithology 2025).

Table 10.2-5. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
yellow-breasted chat *Icteria virens*	SSC	Habitat includes early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow borders of streams, creeks, sloughs, and rivers. Often nest in dense thickets of blackberry (*Rubus* spp.) and willow (Shuford and Gardali 2008).	Observed during Yuba Water's sediment management activities on Oregon Creek in 2021 a few miles downstream of Log Cabin Diversion Dam.
loggerhead shrike *Lanius ludovicianus*	SSC	Occurs in open country with scattered trees and shrubs, savanna, desert scrub, and, occasionally, open woodland; often perches on poles, wires, or fence posts (FERC 2019).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
purple martin *Progne subis*	SSC	Occurs in a wide variety of open and partly open situations, frequently near water or around towns (FERC 2019).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
yellow warbler *Setophaga petechia*	SSC	Occurs in open scrub, second-growth woodland, thickets, farmlands and gardens, especially near water; riparian woodlands, especially of willows, in the west (FERC 2019).	Observed during Yuba Water's sediment management activities on Oregon Creek in 2021 a few miles downstream of Log Cabin Diversion Dam.
great gray owl *Strix nebulosa*	SE FSS-P FSS-T	Suitable habitat includes large, broken-topped snags usually 25-72 feet above the ground (CWHR 1990c). Suitable habitat is present surrounding the reservoir.	The closest known occurrence from 2010 is located approximately 0.4-mile south of the Lohman Ridge Diversion Tunnel along Burnside Way (CDFW 2025a).
California spotted owl-Sierra Nevada DPS *Strix occidentalis occidentalis*	FCT SSC FSS-P, FSS-T	Suitable habitat includes mature, multi layered forest with complex structure, larger tree (greater than 24 in. diameter at breast height), high canopy cover, and large amounts of woody debris. Typically occurring in mid-elevation ponderosa pine, mixed conifer, white fir, and mixed evergreen forest with a few occurring in the oak woodlands of the western foothills. (USFWS 2022b).	Known from the YRDP Found fifty-four occurrences and eight protected activity centers within or adjacent to the YRDP, including eight home range core areas and one spotted owl habitat area, as defined by the Forest Service. Occurrences and protected activity centers are adjacent to: Our House Diversion Dam and impoundment, Lohman Ridge Diversion Tunnel, Log Cabin Diversion Dam and impoundment, Camptonville Diversion Tunnel, New Bullards Bar Reservoir, New Colgate Powerhouse and Switchyard, Schoolhouse Campground, Hornswoggle Group Campground, Dark Day Boat Launch, Dark Day Campground and Day Use Area, and Schoolhouse Trail. Fifty-four recorded occurrences were within 0.25-mile of New Bullards Bar Reservoir and New Colgate Power Tunnel; four were within a protected activity center, four were within a home range core area, and one was within a spotted owl habitat area within 0.25-mile of New Bullards Bar Reservoir. A protected activity center and home range core area is located along the New Colgate Power Tunnel and another protected activity center and home range core area is located at Our House Diversion Dam (FERC 2019).
MAMMALS			
Pallid bat *Antrozous pallidus*	SSC FSS-P, FSS-T	Ranges across all of California in a wide variety of habitats with a preference for arid and semi-arid, and rocky, mountainous areas (Miller 2002).	Known from the YRDP Found at Camptonville Tunnel, below New Bullards Bar Dam, New Colgate Powerhouse (FERC 2019).
Northern California ringtail *Bassariscus astutus raptor*	FP	Habitat includes mixed oak and conifer woodlands and rocky outcrops (CWHR 2005b).	Known from the YRDP Found within YRDP Boundary during pre-licensing studies and 2012 bat surveys (FERC 2019).
Townsend's big-eared bat *Corynorhinus townsendii*	SSC FSS-P, FSS-T	This species has a broad range in the western U.S., occupying montane forests dominated by pine (*Pinus* spp.), fir (*Abies* spp.), and aspen (*Populus tremuloides*) trees as well as subalpine areas and arid desert habitats. Suitable habitat is present within the YRDP (Adams 2003, Kunz and Martin 1982).	Known from the YRDP. Found within YRDP Boundary during 2012 studies (acoustic detections). This species is known to occur at Camptonville Tunnel, below New Bullards Bar Dam, and New Colgate Powerhouse (FERC 2019).
spotted bat *Euderma maculatum*	SSC	Generally occurs in desert, mixed coniferous forests, and grassland habitats. Prefers to roost in rock crevices on cliffs, but would sometimes use caves and buildings (CWHR 2000a).	Known from the YRDP. Found within YRDP Boundary during 2012 studies (acoustic detections). This species is known to occur at Camptonville Tunnel, below New Bullards Bar Dam, and New Colgate Powerhouse (FERC 2019).
Western mastiff bat *Eumops perotis californicus*	SSC	Western mastiff bat is primarily found in the Sierra Nevada, the Coast Range south of San Francisco, and throughout southern California. It occupies a variety of habitats, including desert scrub, chaparral, oak woodland, ponderosa pine forests, and high elevation (up to 4,600 feet) meadows in mixed conifer forests. Roosts are generally high above the ground and allow an unobstructed drop at the roost opening of 10 feet or more. Suitable roosts include exfoliating rock slabs and crevices in large boulders and buildings. (Ahlborn and White 1990)	The closest known occurrence from 2022 is located approximately 1 mile from the Yuba River at the divergence into the South Yuba River (NABat 2024).

Table 10.2-5. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
Western red bat *Lasiurus frantzii* *(=blossevillii)*	SSC FSS-T	Suitable habitat includes riparian habitats within arid and semi-arid regions of southwestern U.S.; it almost exclusively roosts within densely foliated trees: willow, cottonwood, sycamore, elder, and ash species (*Fraxinus* spp.). (Andersen and Geluso 2018, Solick et al. 2020).	Known from the YRDP. Found within YRDP Boundary during 2012 studies (acoustic detections). This species is known to occur at Our House Diversion Dam, Log Cabin Diversion Dam, Camptonville Tunnel, Dark Day Campground and Boat Launch, below New Bullards Bar Dam, New Colgate Powerhouse, and two occurrences at Slate Creek inflow to New Bullards Bar Reservoir (FERC 2019).
Sierra marten *Martes caurina sierrae*	FSS-P, FSS-T	Occurs in late succession forest near streams and meadows (FERC 2019).	The closest known occurrence from 2012 is located approximately 2 miles northeast of the Campton Diversion tunnel (CDFW 2025a).
fringed myotis *Myotis thysanodes*	FSS-P, FSS-T	Occurs in much of California. Habitats are desert, riparian, grassland, and woodland habitats at 4000-7000 ft. (Barbour and Davis 1969, CWHR 2005c).	Known from the YRDP This species is known to occur at Our House Diversion Dam (FERC 2019).
American badger *Taxidea taxus*	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow (FERC 2019).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).

Key:

Federal:
(BGEPA) Bald and Golden Eagle Protection Act
(FE) Federally Endangered
(FT) Federally Threatened
(FSS) Forest Service Sensitive
-P Plumas National Forest
-T Tahoe National Forest
State:
(FP) Fully Protected
(SCE) State Candidate Endangered
(SE) State Endangered
(SSC) State Species of Special Concern
(ST) State Threatened

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10.2.2 Below Englebright Dam

Below Englebright Dam, the Project Area is located in Yuba and Nevada counties, California. Elevation in the Proposed Projects Boundaries ranges from 350 feet to 1000 feet above msl, while the Project Area elevation along the Yuba River downstream of Englebright Reservoir ranges from 350 feet to 59 feet msl. The Project Area downstream of Englebright Dam fall in two watersheds, the Dry Creek (HUC 1802012509) and the Yuba River (HUC 1802012510) (Figure 10.2-1). The Yuba River is a tributary to the Feather River and is part of the Sacramento River Basin, which drains into San Francisco Bay (CDFW 2024a).

10.2.2.1 Vegetation Communities within the Proposed Projects Boundary

Vegetation communities in the FERC Project Boundaries of the Proposed Projects were determined using *A Manual of California Vegetation Online* (CNPS 2024). Vegetation communities below Englebright Dam were mapped and reviewed using a combination of data from the Narrows 1 Hydroelectric DLA (YCWA 2023) and publicly available mapping data by VegCAMP (CDFW 2024b). The area within the existing FERC Project Boundary for the Narrows 2 development of the YRDP was mapped during relicensing studies in 2010. Communities were also assessed to see if any meet the definition of a special-status vegetation community, as described in Section 10.2.1.3.

Vegetation communities below Englebright Dam contain a mixture of blue oak woodland and interior coast live oak woodland with some areas comprised of annual grassland with virtually no tree or shrub cover. These areas are dominated by non-native herbs and grasses, including ripgut grass (*Bromus diandrus*), red brome, smooth cat's-ear (*Hypochaeris glabra*), and tiny bedstraw (*Galium murale*). Some native species also occur, including wild hyacinth, harvest brodiaea (*Brodiaea elegans* ssp. *elegans*), and peninsular onion (*Allium peninsulare* var. *peninsulare*).

Table 10.2-6 details the acres and descriptions of each habitat type within the FERC Project Boundaries of the Proposed Projects, which are shown on Appendix 10A.

10.2.2.2 Vegetation Communities Along the Lower Yuba River

Vegetation communities within the affected reach of the lower Yuba River below the Proposed Projects' boundaries were mapped and reviewed using publicly available mapping data by VegCAMP (CDFW 2024b). The mapped vegetation communities along the 100-year floodplain of the lower Yuba River from below Englebright Dam to the confluence of the Feather River are described in Table 10.2-7 below and mapped on Appendix 10F.

In addition, agriculture and urban vegetation communities have been identified in the lower Yuba River area. The agriculture vegetation community consists of farming practices, including cultivation of soils for the growing of crops and the rearing of animals. Urban habitats include industrial and residential properties, existing roads, recreational areas, and various other areas with a history of disturbance supporting ruderal, ornamental, or introduced vegetation. Vegetation in urban areas can consist of tree groves, street strips, shade trees/lawns, lawns, and shrub cover. Both vegetation communities are not found in the Manual and are unranked.

Table 10.2-6 Habitats and Acreages in the Proposed Projects Boundaries Below Englebright Dam.

Habitat	Acres	Habitat Description
Annual Grassland/Rock Outcrop	0.1	This vegetation community is dominated by ripgut grass and red brome with some minor cover of herbs, including goldback fern (*Pentagramma triangularis*) and elegant clarkia (*Clarkia unguiculata*) and scattered, isolated shrubs such as large-flowered orange monkeyflower (*Diplacus grandiflorus*), California buckeye, and edible fig (*Ficus carica*). This habitat is co-dominated by non-native grasses and bare ground that constitute the majority of the habitat area. This vegetation community is located on a steep north facing slope with plants occurring on slope terraces between at the top (southern) end of the FERC Project Boundary. This vegetation community is not ranked and not considered sensitive by CDFW.
Barren	0.1	Barren areas are undeveloped bare grounds devoid of plants but have not become developed hardscape. This vegetation community is not ranked and not considered sensitive by CDFW.
Blue Oak Woodland/Annual Grass	25.6	One blue oak woodland/annual grass dominated community was identified along the Narrows 2 Powerhouse and access road. This plant community is characterized by a wide open overstory of mature blue oak with little to no shrub layer. The herb layer in this plant community ranges from absent to dense and is dominated by annual grasses. Blue oak woodland has a CDFW ranking of S4 and is not considered a **sensitive natural community**.
California Buckeye Grove	0.1	This habitat type is dominated in the shrub layer by California buckeye with some occurrence of Oregon ash, toyon, ghost pine, California bay, and/or shrubby interior live oak. However, none of these species have sufficient cover to categorize this habitat as tree dominated. California buckeye grove has a CDFW rating of S3 and is considered a **sensitive natural community.**
Developed	0.7	This habitat type is comprised of buildings, a road, concrete, and other impervious surfaces with no plant growth. This vegetation community is not ranked and not considered sensitive by CDFW.
Disturbed Interior Coast Live Oak – Blue Oak – Foothill Pine Woodland/Grassland	0.8	Within the Proposed Narrows Project Boundary, this vegetation community is co-dominated by coast live oak and blue oak, with marginally more cover of coast live oak and patchy cover of ghost pine in the tree layer, and a closed to moderately open canopy. The shrub layer has isolated patches of California buckeye and large-flowered orange monkeyflower. The herb layer is primarily comprised of ripgut grass and red brome, with some cover of rose clover and elegant clarkia. This vegetation community is located on a steep north facing slope with approximately a quarter of the area being bare rock, with terracing dominated by the plants mentioned above. This vegetation community is not ranked and not considered sensitive by CDFW.
Fremont Cottonwood – Red Willow Forest	5.0	This habitat is dominated by Fremont's cottonwood and red willow in the tree layer. Additional tree species can include but are not limited to other willows, box elder, species of ash, and western sycamore (*Platanus racemosa*). Fremont cottonwood forest and woodland is ranked S3.2 and considered a **sensitive natural community.**
Rock Outcrop	0.2	This habitat is comprised of exposed rock with minimal to no vegetation cover. This includes the portion of the Yuba River in the Projects Area and potentially would be open water in high flow years. This vegetation community is not ranked and not considered sensitive by CDFW.
Total acreage	**32.6**	

Table 10.2-7. Habitats and Acreages Along the Lower Yuba River.

Habitat	Acres	Habitat Description
Arroyo Willow Thickets	387.8	This vegetation community is dominated by, but not limited to, arroyo willow, in the tall shrub or low tree canopy with big-leaf maple, California button willow, American dogwood, wax myrtle (*Morella californica*). As a shrubland, emergent trees may be present at low cover. This vegetation community has a rank of S4 and is not considered sensitive by CDFW. However, this vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Barren	412.1	Barren areas are undeveloped bare grounds devoid of plants but have not become developed hardscapes. This vegetation community is not found in the Manual and is unranked.
Basket Bush – River Hawthorn Patches	8.3	This vegetation community is dominated by, but not limited to, skunk bush and/or blue elderberry (*Sambucus mexicana)* which are dominant or co-dominant in the shrub canopy with four-wing saltbrush (*Atriplex canescens*), willow-like baccharis (*Baccharis salicina*), interior goldenbush (*Ericameria linearifolia*), matchweed (*Gutierrezia sarothrae*), and common reed (*Phragmites australis*). Emergent trees may be present at low cover, including Fremont cottonwood, oak (*Quercus* spp.) or red willow. The canopy cover is intermittent to continuous and may be tiered, and the herb layer is sparse to intermittent. This vegetation community has a rank of S3.2 and is considered a sensitive natural community.
Blue Oak Woodland and Forest	94.8	This vegetation community is dominated by blue oak in the tree canopy and sometimes co-dominated with California buckeye, California juniper, ghost pine, and coast live oak. The shrub layer is sparse to intermittent. The herb layer is sparse or grassy, and forbs are present seasonally. This vegetation community has a rank of S4 and is not considered a sensitive natural community.
Box Elder Forest and Woodland	3.2	This vegetation community is dominated by, but not limited to, box elder in the tree canopy, with white alder, Oregon ash, northern California black walnut (*Juglans hindsii*), and English walnut (*Juglans regia*). The canopy is typically partially to fully closed and can be tiered. Shrub layer is open to intermittent. Herbaceous layer is sparse to abundant. This vegetation community has a rank of S3 and is considered a sensitive natural community.
California Grape Thicket	18.7	This vegetation community is dominated by, but not limited to, California wild grape, California button willow, western virgin's bower (*Clematis ligusticifolia*), and edible fig. Emergent trees may be present at low cover including box elder, northern California black walnut and Fremont cottonwood. Emergent tree layer, if present, may be at low cover. The shrub layer is intermittent to continuous. Herb layer is variable. This vegetation community has a rank of S3 and is considered a sensitive natural community.
California Sycamore – Coast Live Oak Riparian Woodlands	22.5	This vegetation community is co-dominant by western sycamore and/or coast live oak the tree canopy in riparian habitats with white alder, Fremont cottonwood, valley oak, sandbar willow, and Goodding's black willow. Canopy is open to closed. Shrub layer is open to intermittent. Herb layer is sparse to grassy. This vegetation community has a rank of S3 and is considered a sensitive natural community.
California Annual Herb/Grass Group	211.2	This vegetation community is dominated by annual grasses such as wild oat, soft chess (*Bromus hordeaceus*), ripgut grass, red brome, and Mediterranean barley. Other common herbs include long-beaked filaree, California poppy (*Eschscholzia californica*), redstem filaree, doveweed (*Croton setiger)*, clovers (*Trifolium* spp.), and others. Perennial grasses, found in moist, lightly grazed, or relic prairie areas, include purple needle grass (*Stipa pulchra*) and Idaho fescue (*Fescue idahoensis*). This vegetation community is not found in the Manual and is unranked. This vegetation community would not be considered sensitive by CDFW.
California Black Oak Forest and Woodland	14.6	This vegetation community is dominated by black oak or co-dominated in the tree canopy with white fir, Pacific madrone, and incense cedar. This vegetation community has a rank of S4 and is not considered a sensitive natural community.
California Buckeye Groves	18.6	This vegetation community is dominated by California buckeye in the tree or shrub layer and can be co-dominated by toyon, ghost pine, holly leaf cherry (*Prunus ilicifolia* spp. i*licifolia*), interior live oak, California bay, and California ash (*Fraxinus dipetala*). The herb layer tends to be comprised of grasses or is generally undeveloped. This vegetation community has a rank of S3 and is considered a sensitive natural community.
California Mixed Annual/Perennial Freshwater Vernal Pool/Swale Bottomland	14.9	This vegetation community is comprised of the same species as in the standard form of wild oats and annual brome grassland but with a higher prevalence of native species typically found in vernal pools such as little blennosperma (*Blennosperma nanum var. nanum*), common goldfields (*Lasthenia gracilis*), and dwarf sedella (*Sedella pumila*). This vegetation community would be considered sensitive based on its association with Waters of the United States and/or Waters of the State. This vegetation community is not found in the Manual and is unranked.
California Warm Temperature Marsh/Seep	6.5	This vegetation community is characterized by a lush, dense herb layer with low diversity, sometimes occurring as a monoculture. Structure varies from emergent herbs just above the water surface to tall perennial graminoids like cattails (*Typha* spp.), sedges, and rushes. Dominant species include woolly sedge (*Carex pellita*), black creeper sedge (*Carex praegracilis*), marsh spikerush (*Eleocharis palustris*), Baltic rush (*Juncus balticus ssp. ater)*, knot grass (*Paspalum distichum*) and others. This group includes shallow freshwater to brackish waterbodies found in bottomlands along drainages, in river floodplain depressions, cienegas, oxbow lakes, below seeps, frequently flooded gravel bars, low-lying sidebars, in-fill side channels, small ponds, stockponds, ditches and slow-moving streams, perennial streams in valleys and mountain foothills, as well as in small depressions gouged into basalt by Pleistocene floods, channeled scablands of the Columbia Plateau and within dune fields in the intermountain western U.S. This vegetation community would be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State. This vegetation community is not found in the Manual and is unranked.
Canyon Live Oak Forest and Woodland	21.8	This vegetation community is dominant in the tree layer with canyon live oak. Co-dominant species can include white fir, big-leaf maple, Pacific madrone, sugar pine, tanoak, incense cedar, Douglas-fir, and others. The shrub layer generally has some cover but isn't well developed and the herb layer is sparse. This vegetation community has a rank of S5 and is not considered a sensitive natural community.
Cattail Marshes	37.1	This vegetation community is dominant or co-dominant in the herb layer by, but not limited to, creeping bentgrass (*Agrostis stolonifera*), pacific silverweed (*Argentina egedii*), sedge (*Cyperus* spp.), and cock's spur barnyard grass (*Echinochloa crus-galli*). Emergent trees may be present at low coverage like willows. This vegetation community has a rank of S5 and is not considered sensitive by CDFW. However, this vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Chamise Chaparral	3.0	This vegetation community is dominated by Chamise chaparral (*Adenostoma fasciculatum*) and co-dominated by red shank (*Adenostoma sparsifolium*), Eastwood's manzanita (*Arctostaphylos glandulosa*), whiteleaf manzanita, and viscid manzanita. Emergent trees may be present at low cover. This vegetation community has a rank of S5 and is not considered a sensitive natural community.
Cliffs and Rock Outcroppings	38.1	This habitat is generally unvegetated and comprised of rocks and boulders on slopes and ridge tops. This habitat often has many caves and cavities in it. Some vegetation may be present but usually at less than 10 percent cover. This habitat is unranked and would not be considered a sensitive community.

Table 10.2-7. (Continued).

Habitat	Acres	Habitat Description
Common and Giant Reed Marshes	6.0	This vegetation community is dominated in the shrub layer by giant reed (*Arundo donax*) or common reed and sometimes codominated with herb species including western ragweed (*Ambrosia psilostachya*), yerba mansa (*Anemopsis californica)*, Baltic rush, Cooper's rush (*Juncus cooperi*), and perennial pepperweed (*Lepidium latifolium)*. Emergent shrubs may be present, including marsh baccharis (*Baccharis glutinosa*), mule fat (*Baccharis salicifolia ssp. salicifolia*) or California button willow. This vegetation community is unranked and is not considered sensitive by CDFW. However, this vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Coyote Brush Scrub	33.3	This vegetation community is dominated by coyote brush, California coffeeberry (*Frangula californica*) and/or elliptical silk tassel bush (*Garrya elliptica*), is dominant to co-dominant in the shrub canopy with California sagebrush (*Artemisia californica*), orange monkey flower (*Diplacus aurantiacus*), California buckwheat (*Eriogonum fasciculatum*), salal (*Gaultheria shallon*), and/or oceanspray. Emergent trees may be present at low cover including Bishop pine (*Pinus muricata*), douglas-fir, coast live oak, or California bay. Herb layer is variable. This vegetation community is ranked S5 and is not considered sensitive by CDFW.
Eucalyptus – Tree of Heaven – Black Forest Groves	0.4	This vegetation community is dominated by blackwood acacia (*Acacia melanoxylon*), wattles (*Acacia* spp.), tree of heaven (*Ailanthus altissima*), eucalyptus (*Eucalyptus* spp.) or black locust (*Robinia pseudoacacia*) in the tree canopy. The tree canopy is open to closed. The shrub layer is sparse to intermittent. The herb layer is sparse to intermittent. This vegetation community is unranked and is not considered sensitive by CDFW.
Foothill Pine Woodland	1.2	This vegetation community is dominated by ghost pine in the tree canopy with California buckeye, California juniper, western juniper, coulter pine (*Pinus coulteri*), canyon live oak, and shrubby interior live oak. The canopy is open to intermittent and one or two tiered. Shrubs are common or infrequent and the herbaceous layer is sparse or grassy. This vegetation community is ranked S4 and is not considered sensitive by CDFW.
Fremont Cottonwood Forest and Woodland	1,052.3	This vegetation community is dominated in the tree canopy by Fremont cottonwood and sometimes co-dominated in the tree canopy with box elder, Oregon ash, velvet ash (*Fraxinus velutina*), northern California black walnut, southern California black walnut (*Juglans regia*). The shrub layer is intermittent to open. The herbaceous layer is variable. This vegetation community is ranked S3.2 and is considered a sensitive natural community.
Goldenaster Patches	10.4	This vegetation community is dominated by rayless goldenaster (*Heterotheca oregona*) and sometimes co-dominated by slender wild oat (*Avena barbata*), black mustard (*Brassica nigra*), ripgut grass, soft chess, and purple clarkia (*Clarkia purpurea*) in the herbaceous layer. This vegetation community is ranked S3 and is considered a sensitive natural community.
Goodding's Willow – Red Willow Riparian Woodland and Forest	234.3	This vegetation community is dominated by Goodding's black willow in the tree or shrub canopy. Other tree or shrub species could include box elder, California buckeye, white alder, incense cedar, Oregon ash, and ghost pine. Shrubs include mule fat, American dogwood, California rose, Himalayan blackberry, weak willow (*Salix exigua*). The shrub layer is sparse to closed. The herb layer is variable. This vegetation community is ranked S3 and is considered a sensitive natural community.
Hardstem and California Bulrush Marshes	4.5	This vegetation community includes a tree layer that may include white alder, Fremont cottonwood, or Goodding's black willow. The shrub layer may include California button willow, California rose, Himalayan blackberry, weak willow, and arroyo willow. The dominant vegetation in the community is western sharp bulrush (*Schoenoplectus acutus var. occidentalis*) and/or California bulrush (*Schoenoplectus californicus*) in the herbaceous layer and sometimes co-dominated by, but not limited to, Indian hemp (*Apocynum cannabinum*), fern-like mosquito fern (*Azolla filliculoides*), saltmarsh bulrush (*Bolboschoenus maritimus ssp. paludosus*) and Santa Barbara morning glory (*Calystegia sepium spp. binghamiae*). This vegetation community is ranked S3 and is considered a sensitive natural community.
Hinds Walnut and Related Stands	13.6	This vegetation community is dominated by northern California black walnut or hybrids in the tree canopy with Fremont cottonwood, valley oak, and Goodding's black willow. Shrubs may include weak willow or blue elderberry. The shrub layer is open to intermittent. The herbaceous layer is sparse. This vegetation community is ranked S1.1 and is considered sensitive by CDFW. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Himalayan Blackberry – Rattlebox – Edible Fig Riparian Scrub	98.7	This vegetation community is dominant or co-dominant by shrub canopy. Emergent trees may be present at low cover, including white alder, Fremont cottonwood, coast live oak, valley oak, shrubby interior live oak or red willow. This vegetation community is unranked but could be considered sensitive based on its association with Waters of the United States and/or Waters of the State.
Interior Live Oak – Shreve Oak Woodland and Forest	141.0	This vegetation community is dominate or co-dominant by shreve oak (*Quercus parvula var. shrevei*) or shrubby interior live oak in the tree canopy and can also include, but is not limited to big-leaf maple, California buckeye, Pacific madrone, tan oak, ponderosa pine, and ghost pine. The canopy is open to closed or savanna-like. Shrub layer is sparse to intermittent. Herb layer is sparse to intermittent or grassy. This vegetation community is ranked S4 and is not considered sensitive by CDFW.
Introduced North American Mediterranean Woodland and Forest	18.6	This vegetation community consists of non-native trees including tree of heaven, wattle, eucalyptus, edible fig, ngaio tree (*Myoporum laetum*), Aleppo pine (*Pinus halepense*), black locust, pepper tree (*Schinus molle*), and Brazilian pepper tree (*Schinus terebinthifolia*) that have escaped from planted groves or windbreaks and become naturalized stands, ornamentals that have escaped from cultivation, and naturalized stands in wildland areas from dispersal via rhizomes or seeds. Also included are native tree species that have become invasive in regions outside their natural range, such as Monterey cypress (*Hesperocyparis macrocarpa*) and Monterey pine (*Pinus radiata*). Stands occur on disturbed areas, waste lands, dry washes or along roadsides. They may also occur along impacted riparian corridors, but these species are not restricted to wet habitats. Understories are variable and can be depauperate. This vegetation community is not found in the Manual. This vegetation community is unranked and is not considered sensitive by CDFW.
Lacustrine	2,418.8	The lacustrine system is bounded by upload or by wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens. Lacustrine systems formed by damming a river channel are bounded by a contour approximating the normal spillway elevation or normal pool elevation, except where Palustrine wetlands extend lakeward of that boundary. Where a river enters a lake, the extension of the lacustrine shoreline forms the riverine-lacustrine boundary (Federal Geographic Data Committee 2013). This community is not found in the Manual and is unranked. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Mediterranean California Naturalized Annual and Perennial Grassland	4,308.6	This vegetation community is dominated by non-native annual and perennial grasses such as wild oat, red brome, smilo grass (*Stipa miliacea var. miliacea*), and Mediterranean barley. Other herb species may include long-beaked filaree, redstem filaree, long-beaked hairy hawkbit and rose clover. This vegetation community is not found in the Manual and is unranked. This vegetation community is not considered sensitive by CDFW.

Table 10.2-7. (Continued).

Habitat	Acres	Habitat Description
Mosquito Fern Mats	12.1	This vegetation community is dominated by fern-like mosquito fern or mosquito fern floating on the water surface or characteristically present in the herb layer with dense Brazilian waterweed (*Egeria densa*), lesser duckweed (*Lemna minor*), many root duckmeat (*Spirodela polyrhiza*), northern watermeal (*Wolffia borealis*) and tongue-like mud midget (*Wolffiella lingulata*). Emergent plants may be present at low to high cover, including peplis-like false loosestrife (*Ludwigia peploides*) or aquatic water-milfoil (*Myriophyllum aquaticum*). Cover is open to closed. This vegetation community is ranked S5 and is not considered sensitive by CDFW. However, this vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Naturalized Warm Temperate Riparian and Wetland Ground	7.5	This vegetation community is dominated by Fremont cottonwood and Goodding's black willow saplings. The shrub layer is intermittent to open and the herb layer is variable. This vegetation community is not found in the Manual and is unranked. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Riverine	390.1	Rivers, creeks, and other riverine habitat exist where water flows downgradient over time, forming channels. These channels are frequently contiguous to lakes and fresh emergent wetland habitats and riparian vegetation typically grows along the banks. As elevation and slope decline, the water generally covers a larger surface area and becomes a slow-moving river. Riverine habitat ranges from continuously flowing rivers to intermittent streams. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Sandbar Willow Thickets	88.4	This vegetation community is dominated by narrow-leaved willow (*Salix exigua*) in the shrub canopy and sometimes co-dominated with baccharis (*Baccharis* spp.), California brickellbush, California rose, Himalayan blackberry, and California blackberry. Emergent trees of many different species may be present at low cover. The herb layer is variable. This vegetation community is ranked S4.2 and is not considered sensitive by CDFW. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Temperate Freshwater Floating Mat	4.6	This vegetation community is dominated by a variety of rooted or aquatic herbaceous species, including, but not limited to, water ferns (*Azolla* spp.), many-sepal nuphar (*Nuphar polysepala*), knotweed (*Polygonum* spp.), pondweed (*Potamogeton* spp.), buttercup *(Ranunculus* spp.) and waterweed (*Elodea* spp.) is often present. These communities occur in water too deep for emergent vegetation. This vegetation community is not found in the Manual and is unranked. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Valley Oak Woodland and Forest	135.3	This vegetation community is dominated by valley oak or co-dominant in the tree canopy with California buckeye, valley oak, blue oak, California black oak, shrubby interior live oak and/or California bay. Shrubs are sparse and may include western poison oak. Understory herbs include ripgut grass and/or soft chess. This vegetation community is ranked S3 and is considered a sensitive natural community.
Water Primrose – Water Hyacinth Wetlands	8.9	This vegetation layer is dominated by thick-stalked water hyacinth (*Eichhornia crassipes)*, Uruguayan primrose willow (*Ludwigia hexapet*ala), Montevidean false loosetrife (*Ludwigia peploides ssp. montevidensis*) or other water primrose (*Ludwigia* spp.) species are dominant as emergent or floating plants on the water surface, often with fern-like mosquito fern. Cover is open to continuous. This vegetation community is unranked and is not considered sensitive by CDFW. This vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
White Alder Groves	5.3	This vegetation community is dominant or co-dominant in the tree canopy and can include but is not limited to big-leaf maple, incense cedar, tan oak, and California sycamore. This vegetation community is ranked S4 and is not considered sensitive by CDFW. However, this vegetation community could be considered a sensitive natural community based on its association with Waters of the United States and/or Waters of the State.
Total	**10,307.4**	

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10.2.2.3 Sensitive Natural Communities

Sensitive Natural Communities mapped within the Proposed Projects Boundary below Englebright Dam, as indicated in Table 10.2-7, include Fremont cottonwood – red willow forest and California buckeye groves, both S3 ranked habitats. There are also 23 sensitive communities located outside of the Proposed Projects Boundaries along the lower Yuba River. Ten of these have a sensitive community ranking: Basket Bush – River Hawthorn Patches (S3.2), Box Elder Forest and Woodland (S3), California Grape Thicket (S3), California Sycamore – Coast Live Oak Riparian Woodlands (S3), Fremont Cottonwood Forest and Woodland (S3.2), Goldenaster Patches (S3), Goodding's Willow – Red Willow Riparian Woodland and Forest (S3), Hardstem and California Bulrush Marshes (S3), Hinds Walnut and Related Stands (S1.1), and Valley Oak Woodland and Forest (S3). The remaining thirteen do not have a community ranking, but may be considered sensitive due to their associated with listed waters: Arroyo Willow Thickets, California Mixed Annual/Perennial Freshwater Vernal Pool/Swale Bottomland, California Warm Temperature Marsh/Seep, Cattail Marshes, Common and Giant Reed Marshes, Himalayan Blackberry – Rattlebox – Edible Fig Riparian Scrub, Lacustrine, Mosquito Fern Mats, Naturalized Warm Temperate Riparian and Wetland Ground, Sandbar Willow Thickets, Temperate Freshwater Floating Mat, Water Primrose – Water Hyacinth Wetlands, and White Alder Groves.

10.2.2.4 Federally Protected Wetlands/Waters of the United States

Wetlands and waters of the United States are defined in Section 10.3.1.4. Yuba Water reviewed publicly available data, including NWI (USFWS 2024a), NHD (NRCS 2024), current and historical aerial imagery (Google Earth 2024), to identify known wetlands and other potential Waters of the United States within the Proposed Projects Boundary and on the lower Yuba River downstream of Englebright Dam.

No wetlands were mapped within the Proposed Projects Boundaries. Downstream of Englebright Dam outside of the Proposed Projects Boundaries, there are no NWI wetlands mapped between the Englebright Dam and the Parks Bar Reach, just downstream of State Highway 20. Within the Parks Bar Reach, NWI maps show multiple acres of riverine wetlands within the river channel and overlapping floodplains. At the Dry Creek Reach and in downstream locations to the upper Hallwood Reach (see Figure 10.2-2), ponded water is evident in aerial photographs (Google Earth 2024) in areas associated with private gravel excavations on the north side of the lower Yuba River, and within historical mining debris in the Yuba Goldfields on the south side. Many, but not all, of these water bodies are mapped as wetlands; of those mapped, they are primarily freshwater ponds and lakes.

On the north side of the Daguerre Point Dam Reach, there are several areas mapped as freshwater forested/shrublands. A few of these which appear to be directly adjacent to the lower Yuba River are actually divided by high walls of cobbles, and others are present in goldfield ponds. It is unclear whether the lakes and ponds are directly influenced by water levels from the lower Yuba River, as they are located well outside of the active channel and often at a much higher elevation within hills of cobbles piled up from historical dredging activities.[6] These areas fill during high precipitation events but maintain water levels at different rates. Although they may also fill during high flow

[6] Sediment that washed down from upstream hydraulic mining was dredged to sort gold that had not been captured upstream. Dredging barges floated on the surface of ponds created from the sediment, redepositing the sediment from a swinging conveyor arm in arcs of cobbles, distinct in the Yuba Goldfields (Hagwood 1981).

events, these typically correspond with high precipitation, and hydrologic connectivity remains unclear.

Remaining areas mapped as wetlands in areas downstream to the confluence with the Feather River are either classified as riverine or forested/shrublands and are included in the riparian analysis. Most of these areas are located above bankfull (5,000 cfs), with more developed riparian/wetlands in pockets on the north side of the river that may only be connected to surface flows of the lower Yuba River during flows of 21,000 cfs or higher. These are in the vicinity of the Daguerre Point Dam, and may be connected with other, small drainages leading to the lower Yuba River. There is one wetland mapped as forested/shrub and emergent wetlands which has riparian vegetation within which there is ponding that supports an emergent wetland. Although most of this wetland/riparian area is located above 10,000 cfs, the ponded area is separated from the channel by a dirt berm road which would trap flows at or above 21,000 cfs, it would also be supported by the man-made pond immediately adjacent on the upstream side of another dirt road. Although this area is a confirmed wetland, it is within a riparian area.

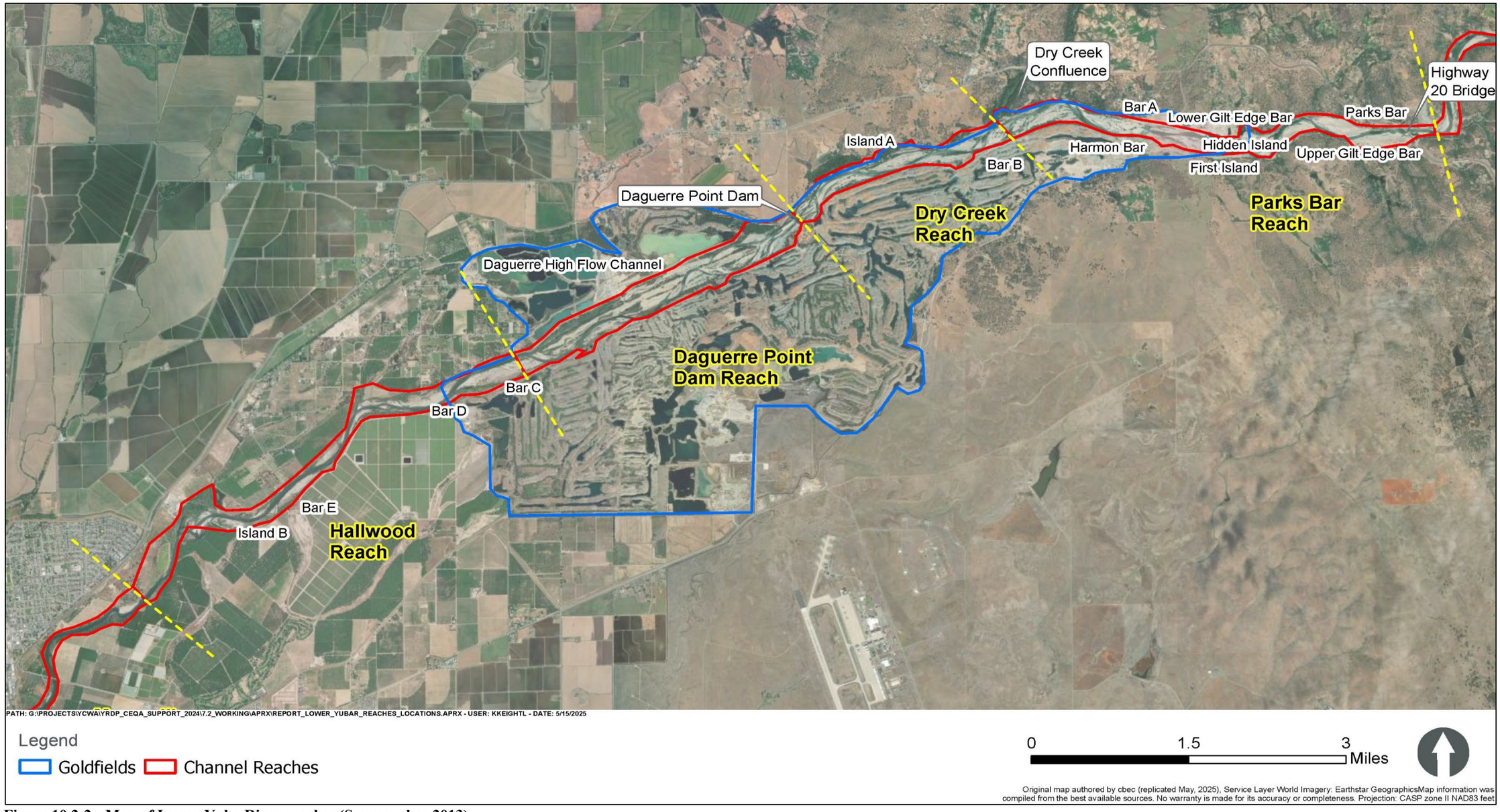

Figure 10.2-2. Map of Lower Yuba River reaches (Source: cbec 2013).

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10.2.2.5 Wildlife Movement Corridors

Available data on existing movement corridors and linkages downstream of Englebright Dam was accessed on May 20, 2025, via the CDFW BIOS 6 Viewer (CDFW 2025a) for the Projects Area directly below Englebright. Data reviewed included the Essential Connectivity Areas layer [ds620], the NLB layer [ds621], and the Missing Linkages in California layer [ds420].

There is a large NLB that starts just above the Proposed Projects Boundaries for the Narrows Project, crosses the lower Yuba River, contains part of the Proposed Projects boundaries for the Narrow 2 development and continues along the lower Yuba River to the oxbow bends. An ECA connects to the NLB and contains the full Proposed Projects Boundary below Englebright Dam, as well as encompassing the lower Yuba River from below Englebright Dam through the two oxbows above Highway 20.

The closest landscape linkage to the Proposed Projects below Englebright Dam runs through Englebright Reservoir just above the dam - Linkage #267. This linkage, known as Valley Crossing, is noted to have a moderate threat to wildlife passage by roads, and a high threat by agriculture. All other potential threats are noted to have an unknown value. Habitat is largely characterized by grassland, riparian, wetlands, and natural and managed woodlands; major land cover is agriculture. The area is noted to have significant restoration needs.

Another landscape linkage - Linkage #28, known as Sacramento Valley Grasslands - crosses the lower Yuba River below the Highway 20 crossing. Noted threats are agriculture, urbanization and water diversions. Habitat is characterized by valley grassland, blue oak savanna, vernal pools, with both agriculture and urbanization as major land covers. Key species noted for the linkage are San Joaquin pocket mouse (*Perognathus inornatus*) and California kangaroo rat (*Dipodomys californicus*).

10.2.2.6 Critical Habitat

There are no known critical habitat units designated by USFWS downstream of Englebright Dam within the Proposed Projects Boundaries or along the lower Yuba River to its confluence with the Feather River.

10.2.2.7 Special-Status Species

Special-status species are defined above in Section 10.2.1.7. On May 20, 2025, the USFWS databases were queried to update the list of federally listed species and critical habitats that have the potential to be affected by the Proposed Projects downstream of Englebright Reservoir. A query of CDFW's CNDDB on May 20, 2025, provided an updated list of processed and unprocessed occurrences for special-status species in USGS 7.5-minute quadrangles within the Project Vicinity including Browns Valley, Camp Far West, French Corral, Loma Rica, Oregon House, Rough and Ready, Smartsville, Wheatland, and Wolf, California. In addition, the CNPS database was queried to identify special-status plant species with the potential to occur in the aforementioned USGS quadrangles. Lastly, the sensitive species lists maintained by the NFS were reviewed. Raw data from the database queries are provided in Appendix 10D, except for the CNDDB RareFind 5 results as they are not available for public distribution.

From 2011 to 2014, Yuba Water completed field studies in support of the FERC YRDP relicensing, including multiple studies assessing and inventorying biological resources, as discussed in Section 10.2.1.7. Biological information gathered during these field studies was considered when defining the environmental setting for the Proposed Projects. Results of these studies can be found in the AFLA (FERC 2019). Field surveys of the Narrows 1 were conducted in spring 2020 and included vegetation mapping, special-status plant surveys, informal aquatic resources assessment and wildlife habitat assessment.

The queries and studies, compliance under the existing license and additional Yuba Water activities related to the Projects, identified special-status species known or with the potential to occur in the Proposed Projects Boundary and be potentially impacted by activities related to the Proposed Projects. Appendix 10E describes the habitat requirements for each of these species and provides conclusions regarding the potential for each species to be impacted by the Proposed Projects. Analysis of these special-status species was conducted in the same manner as those identified above Englebright Dam (see Section 10.2.1.7 above).

Table 10.2-6 provides a summary of potential species, their listings, associated habitats, and nearest documented occurrences for each species in relation to the Proposed Projects downstream of Englebright.

Table 10.2-6. Special-Status Species Known or With the Potential to Occur and Associated Potential Habitat Downstream of Englebright Reservoir.[1]

Species	Special Status Designation	Potential Habitat Within Proposed Projects Boundaries	Nearest Documented Occurrence to the Proposed Projects
PLANTS			
Ferris' milk-vetch *Astraglaus tener* var. *ferrisiae*	CRPR 1B.1	Meadows, seeps, and subalkaline grassland. Elevation: 5–245 feet. Blooming period: April–May (CNPS 2025)	The closes known occurrence from 1891 is associated with the western portion of Yuba City near Marysville Buttes region (CDFW 2025a).
Minute pocket moss *Fissidens pauperculus*	CRPR 1B.2	Suitable habitat includes damp soils in north coast coniferous forest, at elevations of 30 to 3,360 feet (CNPS 2025).	There are no known occurrences within 5 miles of the Proposed Projects on the lower Yuba River (CDFW 2025a).
Butte county fritillary *Fritillaria eastwoodiae*	CRPR 3.2	Suitable habitat includes chaparral, cismontane woodland, and lower montane coniferous forests, at elevations of 160-4,920 feet (CNPS 2025).	There are no known occurrences within 5 miles of the Proposed Projects on the lower Yuba River (CDFW 2025a).
Ahart's dwarf rush *Juncus leiospermus var. ahartii*	CRPR 1B.2	Mesic soils in grassland (CNPS 2025).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Cantelow's lewisia *Lewisia cantelovii*	CRPR 1B.2	Mesic and granitic soils and occasionally serpentine seeps in broadleafed upland and lower montane coniferous forests, chaparral, and cismontane woodland. Elevation: 1,080–4,495 feet. Blooming period: May–October (CNPS 2025).	The nearest occurrence of this species to the Proposed Projects on the lower Yuba River is 9.9 miles away (CDFW 2025a).
Hartweg's golden sunburst *Pseudobahia bahiifolia*	FE SE CRPR 1B.1	Clay, often acidic, soils in cismontane woodland and grassland. Elevation: 45–490 feet. Blooming period: March–April (CNPS 2025)	The closest known occurrence from 1990 is associated with Yuba City, at what was known as Corduas Farm.
Oval leafed viburnum *Viburnum ellipticum*	CRPR 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest (CNPS 2025).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
INVERTEBRATES			
Monarch butterfly *Danaus Plexippus*	FPT	Dependent on host plant, milkweed (*Asclepias spp.*), which grows in the majority of habitats. Overwinters along the coast from Mendocino County south into Baja California in wind-protected groves of gum (*Eucalyptus spp.*), Monterey pine, or Monterey cypress with nectar and water sources nearby (USFWS 2020).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Dependent on host plant, elderberry (*Sambucus spp.*), which most commonly grows in riparian woodlands, but also in some upland habitats such as oak savannas and annual grasslands. Current presumed range in Central Valley extends from Shasta County south to Fresno County, including the valley floor and lower foothills up to about 500 feet in elevation (USFWS 2017).	There is known habitat at Narrows 2 Powerhouse development, but there are no known occurrences within 5 miles of the Proposed Projects (FERC 2019, CDFW 2025a).
AMPHIBIANS			
Southern long-toed salamander *Ambystoma macrodactylum sigillatum*	SSC	Ranges in northeastern California except for the Modoc Plateau. Generally found in grasslands, dry woodlands, coniferous forests, alpine meadows, sagebrush, and intermediate habitats between those listed. Can be found in disturbed agricultural areas. At high elevations, above 6,900 feet, inhabits permanent water bodies that are deeper than 6 feet. Hardwood forests and granitic slopes are also used for upland habitat. This species strongly prefers fishless water bodies (Thomson et al. 2016).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Foothill yellow-legged frog – North Sierra Distinct Population Segment (DPS) *Rana boylii pop. 3*	ST SSC	This DPS is in Yuba, Sierra, Nevada, and Placer counties (USFWS 2021). Generally found in shallow flowing streams and rivers with at least cobble sized substrate. Breeding generally occurs at the margins of wide shallow channels with reduced flow variation near tributary confluences. Specifically, egg masses are placed in low flow locations on or under rocks with preferred substrates being boulders, cobbles, or gravel. Eggs have been found at depths to 34 in. in water velocities of 0 - 0.69 feet per second and at most 40 feet from shore. Maximum water temperature for breeding is 79ºF and 48 to 70ºF is the preferred range. Tadpoles avoid areas below 55ºF and prefer temperatures between 62ºF and 72ºF (Thomson et al. 2016).	The closest known occurrence was below Englebright Dam on 08/27/2002 at Shubert Creek, 0.4-mile upstream of the confluence with the Yuba River and 1 mile west of the Englebright Dam. Another observation was made in 2016 at the Deer Creek and Yuba River confluence (FERC 2019). However, the Yuba River below Englebright is not suitable habitat for the frog, due to its depth and high flows. There are no known occurrences along the lower Yuba River. Additionally, FYLF would not be anticipated to occur below 600 feet, which is about the elevation of Englebright Dam.
REPTILES			
Northwestern pond turtle *Actinemys marmorata*	FPT SSC	Ranges throughout California except for Inyo and Mono Counties. Occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Can be found in both fast and slow-moving water, but needs pools, cover or structures for basking. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson et al. 2016).	There are four occurrences of northwestern pond turtle within the corridor along the lower Yuba River below Englebright Dam prior to the confluence with the Feather River (CDFW 2025a). All of these occurrences were observed along the side channels off of the main stem of the river. This corridor contains mainly sandy substrates and an open canopy that is conducive to northwestern pond turtle nesting and overwintering. The species has the potential to utilize this corridor for all life stages.

Table 10.2-6. (Continued).

Species	Special Status Designation	Potential Habitat Within Proposed Projects Boundaries	Nearest Documented Occurrence to the Proposed Projects
Coast horned lizard *Phrynosoma blainvillii*	SSC	Ranges in the southern half of California outside of the desert, along the foothills of the Sierra Nevada Mountains to Butte County, and along the Central Coast ranges up to Contra Costa County. Generally occurs in sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Negatively associated with Argentine ants (*Linepithema humi*) (Thomson et al. 2016).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
BIRDS			
Golden eagle *Aquila chrysaetos*	BGEPA, FP	Uncommon resident in hills and mountains throughout California, and an uncommon migrant and winter resident in the Central Valley. Prefers rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rock outcrops. (CWHR 1990a).	There are no known nesting individuals but may be a transient species. Known from Englebright Reservoir (Cornell Lab of Ornithology 2022, YCWA 2023).
Short-eared owl *Asio flammeus*	SSC	Occurs in broad expanses of open land with low vegetation for nesting and foraging are required (FERC 2019).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Long-eared owl *Asio otus*	SSC	Widespread but uncommon and local across California year-round, except in the Central Valley where it is a rarely encountered migrant and winter resident. Nests and roosts in dense stands of live oak (*Quercus spp.*) and in riparian thickets with dense canopies near meadow edges. Also nests in dense stands of conifers at higher elevations (FERC 2019).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Burrowing owl *Athene cunicularia*	SCE SSC	Occurs in open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports (FERC 2019). The area at the Narrows 2 development is identified as good habitat (CDFW 2025a).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Northern harrier *Circus cyaneus*	SSC	Suitable habitat for this species includes meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands (Zeiner et al. 1988 – 1990). Some grassland habitat is present, but this species would most likely be a transient.	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
White-tailed kite *Elanus leucurus*	FP	Fairly common resident of the Central Valley, coast, and Coast Range Mountains. Nests in oak savanna, oak and willow riparian, and other open areas with scattered trees near foraging habitat. Forages in open grasslands, meadows, farmlands, and emergent wetlands. Often seen hover foraging over roadsides or grassy highway medians (CWHR 2005d).	The closest known occurrence is approximately a mile downstream of Narrows 2 Powerhouse on the lower Yuba River (CDFW 2025a).
Bald eagle *Haliaeetus leucocephalus*	BGEPA SE FP	Permanent resident in the highest Coast Range mountains, across the Cascade Range, and down the Sierra Nevada to the eastern Transverse Ranges of San Bernardino and Riverside Counties. Uncommon migrant and winter visitor to lowland rivers, lakes, and reservoirs. Nests in large, old-growth, or dominant live trees with open branchwork, especially ponderosa pine. Requires large bodies of water or rivers with abundant fish, and adjacent snags (CWHR 1999a).	This species is known to occur throughout the Proposed Projects and surrounding area. May appear as a transient. Known from Englebright Reservoir (YCWA 2012b, Cornell Lab of Ornithology 2022).
California black rail *Laterallus jamaicensis coturniculus*	ST FP	Saline, brackish, and fresh emergent wetlands. Appears intermittently and sparingly at a few locations in the Sacramento Valley (CDFW 1999b). The FERC Project Boundary does not contain wetlands. Possible occurrence of this species would be as a transient.	The closest known occurrence from 6/20/2006 is located approximately 0.5-mile west of the Narrows 2 access road (CDFW 2025a).
American white pelican *Pelecanus erythrorhynchos*	SSC	In California, nests almost exclusively in large lakes in the Klamath Basin region. On migration and over winter, occurs across much of the state in open wetlands and sheltered bays and lagoons. Nests on ground on earthen, sandy, and rocky islands or rarely on peninsulas or floating tule mat islands. Nests may be in the open in the sand or interspersed with or adjacent to tall weeds and open, low-stature shrubs. Roosts along water edges, beaches, sandbars, or old driftwood (Shuford and Gardali 2008). Possible occurrence of this species would be as a summer transient.	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Purple martin *Progne subis*	SCC	Occurs in a wide variety of open and partly open situations, frequently near water or around towns (FERC 2019). Present in California from mid-March through late September. Requires concentrations of nesting cavities, relatively open air space above accessible nest sites, and relatively abundant aerial insect prey. In the coastal mountains, Cascade Range, and Sierra Nevada foothills, inhabits open forests, woodlands, and riparian areas. Extirpated as a breeder from most of the Central Valley except the Sacramento area where it has taken to nesting in hollow-box bridges (Shuford and Gardali 2008).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).
Yellow warbler *Setophaga petechia*	SSC	Occurs in open scrub, second-growth woodland, thickets, farmlands and gardens, especially near water; riparian woodlands, especially of willows, in the west (FERC 2019).	The closest known occurrence is from a few miles downstream of Log Cabin Diversion Dam on Oregon Creek in 2021 (CDFW 2025a).

Table 10.2-6. (Continued).

Species	Special Status Designation	Potential Habitat Within Proposed Projects Boundaries	Nearest Documented Occurrence to the Proposed Projects
MAMMALS			
Pallid bat *Antrozous pallidus*	SSC	Ranges across all of California in a wide variety of habitats with a preference for arid and semi-arid, and rocky, mountainous areas (Miller 2002).	Known from the Proposed Projects. Documented acoustics at Narrows 1 transmission line during April 4, 2022, studies (PG&E 2023).
Northern California ringtail *Bassariscus astutus raptor*	FP	Occurs in various riparian habitats, and in brush stands of most forest and shrub habitats, at low to middle elevations. Suitable habitat consists of a mixture of forest and shrubland in close association with rocky areas or riparian habitats. (CDFW 2005b).	Known from the Proposed Projects. This species was observed during relicensing studies at Narrows 2 Powerhouse and Switchyard (FERC 2019).
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	Roosts in buildings, mines, tunnels, and caves; feeds along habitat edges (0-10, 365 feet) (CDFW 2022a).	Known from the Proposed Projects. This species is known to occur at Narrows 2 Powerhouse (FERC 2019). Also documented acoustics at Narrows 1 Powerhouse during 2022 studies (PG&E 2023).
Spotted bat *Euderma maculatum*	SSC	Ranges across the eastern half of California from the low foothills and over the Cascade and Sierra Nevada crests to Nevada, as well as all of Southern California except for the lowlands of Orange and Los Angeles Counties. Generally occurs in desert, mixed coniferous forests, and grassland habitats. Prefers to roost in rock crevices on cliffs but would sometimes use caves and buildings (CWHR 2000a).	Known from the Proposed Projects. This species is known to occur at Narrows 2 Powerhouse (FERC 2019). Also documented acoustics at Narrows 1 Powerhouse during 2022 studies (PG&E 2023).
Western mastiff bat *Eumops perotis californicus*	SCC	Western mastiff bat is primarily found in the Sierra Nevada, the Coast Range south of San Francisco, and throughout southern California. It occupies a variety of habitats, including desert scrub, chaparral, oak woodland, ponderosa pine forests, and high elevation (up to 4,600 feet) meadows in mixed conifer forests. Roosts are generally high above the ground and allow an unobstructed drop at the roost opening of 10 feet or more. Suitable roosts include exfoliating rock slabs and crevices in large boulders and buildings. (Ahlborn and White 1990).	Known from the Proposed Projects. Documented acoustics at Narrows 1 Powerhouse during 2022 studies (PG&E 2023).
Western red bat *Lasiurus frantzii* *(=blossevillii)*	SSC	Roosts in trees and sometimes woody shrubs. Forages over a wide variety of habitat types (Andersen and Geluso 2018, Solick et al. 2020).	Known from the Proposed Projects. This species is known to occur Narrows 2 Powerhouse (FERC 2019). Documented acoustics at Narrows 1 Powerhouse during 2022 studies (PG&E 2023).
American badger *Taxidea taxus*	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow (FERC 2019).	There are no known occurrences within 5 miles of the Proposed Projects (CDFW 2025a).

[1] The species in the table were included to complete a comprehensive assessment of potentially occurring species; however, their inclusion does not necessarily constitute presence.

Key:
Federal:
(BGEPA) Bald and Golden Eagle Protection Act
(FE) Federally Endangered
(FT) Federally Threatened
State:
(FP) Fully Protected
(SCE) State Candidate Endangered
(SE) State Endangered
(SSC) State Species of Special Concern
(ST) State Threatened

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10.2.3 Above YRDP Area

The reaches upstream of the Proposed YRDP Boundary are within Yuba County. Elevation ranges from 3,250 feet to 6,290 feet above msl. These reaches fall within the following watersheds: the Middle Yuba River (HUC-1802012505); Upper South Yuba River (HUC-1802012506); and the Lower South Yuba River (HUC-1802012507) (Figure 10.2-1). There are no Proposed YRDP elements in these reaches.

10.2.3.1 Vegetation Setting

Alternative 1 flows may indirectly impact riparian corridors along the South Yuba River, Middle Yuba River upstream of the YRDP. These areas were not mapped during relicensing are included herein using modeled vegetation data from the FRAP (CalFIRE 2022). Communities were then assessed to see if any meet the definition of a special-status vegetation community. Table 10.2-9 details the acres and descriptions of each habitat type, as shown on Appendix 10G.

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Table 10.2-7. Habitats and Acreages upstream of the YRDP Boundary.

Habitat	Acres	Habitat Description
Annual Grassland	38.7	This vegetation community is dominated by annual grasses such as wild oat, red brome, small fescue, and Mediterranean barley. Other herb species may include long-beaked filaree, redstem filaree, wild hyacinth, tidy-tips, long-beaked hairy hawkbit and rose clover. This vegetation community is not ranked and not considered sensitive by CDFW.
Barren	875.3	Barren areas are undeveloped bare grounds devoid of plants but have not become developed hardscape. This vegetation community is not ranked and not considered sensitive by CDFW.
Blue Oak-Foothill Pine Woodland	140.8	This community is dominated by blue oak and ghost pine in the tree layer, with a general prevalence of blue oak over ghost pine. Co-occurring tree species can include coast live oak, interior live oak, valley oak, and California buckeye. The shrub layer tends to be relatively low in cover but can include species of ceanothus, manzanita, coffeeberry, California redbud (*Cercis occidentalis*), gooseberry, elderberry, and western poison oak. The herb layer is generally comprised of annual grasses and scattered occurrences of other herbs. This community is most functionally equivalent to blue oak woodland as described in the Manual which has a CDFW ranking of S4 and is not considered a sensitive natural community.
Blue Oak Woodland	17.1	This vegetation community is dominated by blue oak in the tree canopy and sometimes co-dominated with California buckeye, California juniper, ghost pine, and coast live oak. The shrub layer is sparse to intermittent. The herbaceous layer is sparse or grassy, and forbs are present seasonally. Blue oak woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Coastal Oak Woodland	2.3	This community occurs on the south and east facing slopes of the west shore of New Bullards Bar Reservoir and on the north facing slopes of the North Yuba River canyon. This community is characterized by an open overstory of mature forest dominated by canyon live oak with some Douglas-fir, Ponderosa pine, California black oak, tan oak, and Pacific madrone. The shrub layer is dense to patchy and is dominated by deer brush, western poison oak, tan oak recruits, viscid manzanita and Himalayan blackberry. Coast live oak woodland has a CDFW ranking of S5 and is not considered a sensitive natural community.
Douglas Fir	3306.5	This community includes an overstory dominated by Douglas-fir, and includes a lower overstory of dense, sclerophyllous, broad leaved evergreen trees typically including tan oak and Pacific madrone. A small number of pole and sampling trees occur throughout stands, and on wet sites, the shrub layer is well developed, often with 100 percent cover. Cover of the herb layer under the shrubs can be up to 10 percent. Dry habitats have greater cover of shrubs and especially grasses. This communities nearest functional equivalent in the Manual is douglas fir -tanoak – madrone forest which has a CDFW ranking of S4 and is not considered a sensitive natural community.
Jeffrey Pine	219.5	This community is dominated by Jeffrey pine (*Pinus jeffreyi*) in the tree layer and can have lesser cover of other pine species as well as white fir, red fir, incense cedar, and black cottonwood (*Populus trichocarpa*). Shrub cover varies widely based on location but can include huckleberry (*Vaccinium* spp.), manzanita, scrub oaks, mountain misery, rabbitbrush (*Chrysothamnus* spp.), currants (*Ribes* spp.), snowbush, and ceanothus. Herb cover also varies widely but can consist of buckwheat, bird's beak, rockcress (*Arabis* spp.), penstemon (*Keckiella* spp.), needlegrass, wildrye and others. Jeffrey pine woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Lacustrine	921.5	The lacustrine system is bounded by uplands or wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens. Lacustrine systems formed by damming a river channel are bounded by a contour approximating the normal spillway elevation or normal pool elevation, except where palustrine wetlands extend lakeward of that boundary. Where a river enters a lake, the extension of the lacustrine shoreline forms the riverine-lacustrine boundary (Federal Geographic Data Committee 2013). This community type is not found in the Manual and is not ranked. This community could be considered **sensitive** based on its association with Waters of the United States and/or Waters of the State.
Lodgepole Pine	91.4	This vegetation community is dominated by lodgepole pine in the tree layer, with sporadic occurrences of aspen and mountain hemlock. The shrub layer is generally minimally developed and the herb layer ranges from nearly absent to abundant. This community is often found around meadow and stream edges. Lodgepole pine woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.
Mixed Chaparral	215.4	This vegetation community has a wide range of dominant and codominant species that vary from location to location. The shrub layer is generally dense with little space available for a developed herb layer. This habitat generally comprises shrubs of less than 13 feet tall and is variably comprised of manzanita, ceanothus, chamise, silk-tassel, toyon, western poison oak, scrub oaks, mountain mahogany (*Cercocarpus* spp.), and others. Since there is no way to exclude the possibility of this community having areas dominated by a species that would be ranked S3 without field verification, **this community could be considered a sensitive natural community by CDFW.**
Montane Chaparral	644.3	This vegetation community has a wide range of dominant and codominant species that vary from location to location. The shrub layer is generally dense with little space available for a developed herb layer. This habitat generally comprises shrubs of less than 10 feet tall with growth forms ranging from prostrate to tree like. Species in this habitat include manzanitas, mountain mahogany, ceanothus, toyon, cherry, huckleberry oak (*Quercus vaccinifolia*), Fremont silk tassel (*Garrya fremontii*), and others. Since there is no way to exclude the possibility of this community having areas dominated by a species that would be ranked S3 without field verification, **this community could be considered a sensitive natural community by CDFW.**
Montane Hardwood	3481.1	This vegetation community is composed of a pronounced hardwood tree layer, dominated by canyon live oak, with co-dominant tree species varying with elevation range. The shrub layer is infrequent and poorly developed, and the herb layer is sparse. On rocky summits, canyon live oak is a shrub of small diameter, usually less than 13 ft in height. Snags and downed woody material generally are sparse throughout the montane hardwood habitat. This vegetation community is functionally most similar to canyon live oak woodland which is ranked as S5 which is not considered sensitive by CDFW.
Montane Hardwood-Conifer	779.8	This vegetation community includes both conifers and hardwoods, often as a closed forest. Common species include Ponderosa pine, Douglas fir, incense-cedar, California black oak, tan oak, Pacific madrone, Oregon oak, and other localized species. To be considered, at least one-third of the trees must be conifer and at least one-third must be broad leaved. The understory is sparse, however, considerable ground and shrub cover can occur in ecotones or following disturbance. This vegetation community has no functional equivalent in the manual. Two of the potential dominant species are tanoak and Oregon oak, which are S3 ranked communities in the Manual when they are the dominant species. Tanoak is a unique FRAP habitat itself, and as such any potential true stands of tanoak woodland would be captured in that habitat type. Oregon oak is not a FRAP habitat. Since there is no way to exclude the possibility of this community having areas dominated by Oregon oak without field verification, **this community could be considered a sensitive natural community by CDFW**.
Montane Riparian	40.1	This vegetation community is dominated by a variety of riparian trees such as big-leaf maple, black cottonwood, white alder, thinleaf alder (*Alnus viridis* spp. *sinuata*), aspen, dogwood, willow, California bay, Fremont cottonwood, and water birch (*Betula occidentalis*). The community primarily grows along stream banks but can also occupy linear seeps. This **community could be considered sensitive** based on its association with Waters of the United States and/or Waters of the State.
Ponderosa Pine	467.8	This community is dominated by ponderosa pine in the tree layer, with some association of other pines, incense cedar, black oak, Oregon oak, canyon live oak, tanoak, Pacific madrone, white fir, and Douglas fir. This community usually has a well developed shrub layer with various species of manzanita, ceanothus, and mountain misery, as well as bitter cherry (*Prunus emarginata*), western poison oak, dogwood, and Sierra gooseberry (*Ribes roezlii*). The herb layer tends to be dominated by species of bluegrass (*Poa* spp.), brome, sedge, lupine, onion grass (*Melica* spp.), and others. Ponderosa pine woodland has a CDFW ranking of S4 and is not considered a sensitive natural community.

Table 10.2-7. (Continued).

Habitat	Acres	Habitat Description
Riverine	44.1	The riverine system is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetlands and riparian areas dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs. Riverine systems terminate at the downstream end where the concentration of ocean-derived salts in the water equals or exceeds 0.5 ppt during the period of annual average low flow, or where the channel enters a lake. It terminates at the upstream end where the tributary stream originates, or where the channel leaves a lake. Springs discharging into a channel are considered part of the Riverine system (Federal Geographic Data Committee 2013). This community type is not found in the Manual and is not ranked. This community could be considered **sensitive** based on its association with Waters of the United States and/or Waters of the State.
Sierran Mixed Conifer	2664.5	This community is co-dominated by a mixture of white fir, Douglas fir, ponderosa pine, sugar pine, incense cedar, and California black oak in the tree layer. Each of these species can have relative dominance over the other depending on location, except for California black oak which is always sporadically scatted in this community. The shrub layer is variously comprised of deerbrush, manzanita, tanoak, gooseberry, rose, mountain misery, and chinquapin. The herb layer is typically highly diverse with bromes, sedges, needlegrass, rush, and lupine being commonly encountered. This community is functionally most similar to either white fir – douglas fir forest, or ponderosa pine – incense cedar – douglas fir forest, depending on location. Both of these have a CDFW rank of S4 and are not considered a sensitive natural community.
Urban	35.3	This habitat type is comprised of buildings, a road, concrete, and other impervious surfaces with no plant growth. This vegetation community is not ranked and not considered sensitive by CDFW.
Valley Foothill Riparian	10.8	Valley foothill riparian habitats are dominated in the tree layer by Fremont's cottonwood, western sycamore, and valley oak. Subcanopy trees can include white alder, box elder and Oregon ash. Typical species in the shrub layer include California wild grape, California wild rose, California blackberry, blue elderberry, western poison oak, and willow species. The herb layer consists of sedges, rushes, annual grasses, miner's lettuce (*Claytonia* spp.), and poison-hemlock (*Conium maculatum*). **This community could be considered sensitive based on its association with Waters of the United States and/or Waters of the State**.
Valley Oak Woodland	0.4	Valley oak woodland habitats are dominated by valley oaks in the tree layer and codominated variously with California sycamore, Hinds black walnut, interior live oak, box elder, and blue oak. The shrub layer can consist of western poison oak, blue elderberry, California wild grape, toyon, and California coffeeberry. The herb layer consists of various species of brome, oat, barley, ryegrass, and needlegrass. **Valley oak woodland has a CDFW ranking of S3 and is considered a sensitive natural community.**
Wet Meadow	18.0	Wet meadow habitat is made up of open grassy areas with seasonally moist soils, found primarily in forests throughout California. Species present in wet meadows are generally a variable mixture of bent grass (*Agrostis* spp.), sedge, rush, bulrush, wood rush (*Luzula* spp.), hairgrass (*Aira* spp.), and spikerush (*Eleocharis* spp.) as well as other species. The meadow's perennial sedges, rushes, and grasses need water at or near the surface during the growing season. Wet meadow can also be found as a transition between Fresh Emergent Wetland and Perennial Grassland habitats. **This community could be considered sensitive based on its association with Waters of the United States and/or Waters of the State.**
White Fir	202.5	This community is dominated by white fir in the tree layer with at least 80 percent cover. Lower canopy and shrub cover can include canyon live oak, Jeffrey pine, sugar pine, incense cedar, and Greenleaf manzanita. The herb layer tends to be minimally developed. White fir forest has a CDFW ranking of S4 and is not considered a sensitive natural community.
Total acreage	**14,217.3**	

10.2.3.1.1 Sensitive Natural Communities

Sensitive Natural Communities modeled above YRDP, as indicated in Table 10.2-5, include Valley oak woodland which is a S3 ranked community. There are also 3 natural communities that are potentially sensitive because they cover a wide range of vegetation types described in the Manual from which sensitive communities cannot be ruled out in the absence of ground-truthed data. These include mixed chaparral, montane chaparral, and montane hardwood-conifer. Five more may be considered sensitive due to their associated with listed waters: Lacustrine, Montane Riparian, Riverine, Valley Foothill Riparian, and Wet Meadow. Appendix 10B includes a map of all sensitive natural communities modeled above the YRDP.

10.2.3.2 Federally Protected Wetlands/Waters of the United States

There are approximately 1,191.0 acres of mapped NWI wetlands within the reaches upstream of the YRDP Boundary (Table 10.2-10). Yuba Water has not conducted field studies to ground truth this data.

Table 10.2-8. Mapped NWI Wetlands Upstream of the Proposed YRDP Boundary.

Type	Definition	Acres
Lacustrine Limnetic	Includes all habitats in which a lake or other body of open water with no more than 30 percent vegetation cover and is greater than 8.2 feet deep.	628.5
Lacustrine Littoral	Includes all habitats in which a lake or other body of open water with no more than 30 percent vegetation cover and is less than 8.2 feet deep.	139.1
Palustrine Emergent	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of perennial herb species with at least 30 percent absolute cover.	27.3
Palustrine Forested	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of woody plants that are at least 20 feet tall.	11.6
Palustrine Scrub-Shrub	Includes all wetlands dominated by vegetation and are generally less than 20 acres in size and are no deeper than 8.2 feet. Vegetation is comprised of woody plants that are less than 20 feet tall.	16.4
Palustrine (Unconsolidated Bottom)	Includes all wetlands with less than 30 percent vegetation cover, generally less than 20 acres in size, no deeper than 8.2 feet, and have at least 25 percent ground cover of particles smaller than stones.	1.7
Perennial Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing the entire year.	357.7
Intermittent Riverine	Includes all wetlands and habitats contained within a channel that is typically flowing part of the year. If water is not flowing it may remain in isolated pools or surface water may be absent.	1.8
Unknown Riverine	Includes all wetlands and habitats contained within a channel that has an unknown flow duration.	7.0
	Total	**1,191.0**

Source of definitions: Federal Geographic Data Committee. 2013.

In addition to wetlands, Yuba Water reviewed publicly available NHD data to identify other Waters of the United States in the reaches upstream of the YRDP Boundary. Table 10.2-8 below lists the amount of identified NHD streams located in the reaches upstream of the YRDP Boundary. Named creeks include Bear Creek, Bloody Run, Canyon Creek, Clear Creek, Diamond Creek, East Fork Creek, Fall Creek, Fish Creek, Fordyce Creek, French Corral Creek, Granite Creek, Grizzly Creek, Humbug Creek, Indian Creek, Jefferson Creek, Jordan Creek, Kanaka Creek, Kenebec Creek, Little Brown Bear Creek, Little Canyon Creek, Little Shady Creek, Macklin Creek, McKilligan Creek, Middle Yuba River, Moonshine Creek, Moore Flat Creek, North Yuba River,

Oregon Creek, Owl Creek, Poorman Creek, Purdon Creek, Rattlesnake Creek, Rock Creek, Rucker Creek, Rush Creek, Scotchman Creek, Shady Creek, South Yuba River, Spring Creek, Texas Creek, Washington Creek, Wolf Creek, and the Yuba River.

Table 10.2-9. Stream Types and Lengths Present in the Proposed YRDP Boundary.

Stream Type Middle Yuba River	Length (miles)
Artificial Path	13.658
Perennial	33.181
Stream Type South Yuba River	
Artificial Path	21.889
Connector	0.214
Perennial	22.124
Stream Type Canyon Creek	
Artificial Path	0.123
Perennial	10.451
Stream Type Fordyce Creek	
Artificial Path	0.757
Perennial	9.736

10.2.3.3 Wildlife Movement Corridors

A large NLB surrounds multiple areas in the reaches upstream of the YRDP, including all of Fordyce Creek downstream of Fordyce Lake, all of Canyon Creek below Bowman Lake, the majority of the Middle Yuba River and the majority of the South Yuba River. An ECA covers most of the reaches upstream of the YRDP, though a lot of the ECA is mapped as being less permeable.

There is one Landscape Linkage identified in the reaches above YRDP- the Eldorado-Tahoe National Forest Checkerboard Missing Link for forest carnivores and spotted owls, just below Jackson Meadows Reservoir and through the South Yuba River and Middle Yuba River.

10.2.3.4 Critical Habitat

In the reaches upstream of the YRDP, Fordyce Creek and Fordyce Lake are within the Critical Habitat for Sierra Nevada yellow-legged frog (*Rana sierrae*). Additionally, another section of Critical Habitat for California red-legged frog occurs along the South Yuba River above Highway 49. This Critical Habitat is shown on Appendix 10B.

10.2.3.5 Special-Status Species

Special-status species are defined above in Section 10.2.1.7. On May 20, 2025, the USFWS databases were queried to update the list of federally listed species and critical habitats that have the potential to be affected upstream of the YRDP. A query of CDFW's CNDDB provided an updated list of processed and unprocessed occurrences for special-status species within 1 mile of the streams upstream of the YRDP. The CNPS database was queried for USGS 7.5-minute quadrangles Alleghany, Blue Canyon, Camptonville, Challenge, Cisco Grove, English Mountain, French Corral, Graniteville, Haypress Valley, Nevada City, North Bloomfield, Pike, Sierra City, Washington, and Webber Peak. Lastly, the sensitive species lists maintained by the NFS were reviewed. Raw data from the database queries are provided in Appendix 10D.

These queries and studies identified special-status species known or with the potential to occur upstream of the YRDP and may be potentially impacted by activities related to the Proposed Projects. Appendix 10E describes the habitat requirements for each of these species and provides conclusions regarding the potential for each species to be impacted by the Proposed Projects. Analysis of these special-status species was conducted in the same manner as those identified above Englebright Dam (see Section 10.2.1.7 above).

Table 10.2-10 provides a summary of potential species, their listings, associated habitats, and nearest documented occurrences for each species in relation to the Proposed Projects.

Table 10.2-10. Special-Status Species Known or With the Potential to Occur Within the Upper Reaches of the Proposed Project Area and Associated Potential Habitat.

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
PLANTS			
Scalloped moonwort *Botrychium crenulatum*	FSS-T CRPR 2B.2	Bogs, fens, meadows, seeps, marshes, freshwater swamps, montane coniferous forests. Elevation: 4,159–10,758 feet. Sporing period: June–September (CNPS 2025).	The closest known occurrence from 07/10/2002 is approximately 0.80 mile south of Lake Spaulding in the upper reaches of Yuba River.
Western goblin *Botrychium montanum*	FSS-T CRPR 4.2	Mesic soils in bogs, fens, lower and upper montane coniferous forest. Elevation: 4,773–7,152 feet. Sporing period: July–September (CNPS 2025)	There are no known occurrences within 5 miles of the Project area (CDFW 2025a).
Watershield *Brasenia schreberi*	CRPR 2B.3	Freshwater marshes and swamps. Elevation: 95–7,220 feet. Blooming period: June–September (CNPS 2025).	The closest known occurrence from 07/24/1973 is associated with Eagle Lakes within the upper reaches of Yuba River (CDFW 2025a).
Thread-leaved beakseed *Bulbostylis capillaris*	WL-T CRPR 4.2	Meadows, seeps, and montane coniferous forests. Elevation: 1,295–6,810 feet. Blooming period: June–August (CNPS 2025).	The closest known occurrence from 07/23/2011 is located along the upper reaches of the Project area, downstream of Lake Spaulding (CDFW 2025a).
Woolly-fruited sedge *Carex lasiocarpa*	CRPR 2B.3	Bogs, fens, freshwater marshes and swamps, and lake margins. Elevation: 5,575–6,890 feet. Blooming period: June–July (CNPS 2025).	The closest known occurrence from 08/28/1966 is associated with the Eagle Lakes along the upper reaches of the Project area (CDFW 2025a).
Mud sedge *Carex limosa*	WL-T CRPR 2B.2	Bogs, fens, meadows, seeps, marshes, swamps, and montane coniferous forests. Elevation: 3,935–8,860 feet. Blooming period: June–August (CNPS 2025).	The closest known occurrence from 08/28/1966 is associated with the Eagle Lakes along the upper reaches of the Project area (CDFW 2025a).
Northern coralroot *Corallorhiza trifida*	WL-T CRPR 2B.1	Mesic soils in lower montane coniferous forest and the edges of meadows and seeps. Elevation: 4,490–5,725 feet. Blooming period: June–July (CNPS 2025).	The closest known occurrence from 07/09/2009 is associated with Milton Reservoir within the upper reaches of the Project area (CDFW 2025a).
Clustered lady's-slipper *Cypripedium fasciculatum*	FSS-P FSS-T	Prefers mesic to moist, shady conifer forest in elevations ranging from 330 to 6,565 feet (Sawyer et al. 2009).	Found adjacent to the Bullards Bar Trail on TNF lands (FEIRC2019).
Starved daisy *Erigeron miser*	FSS-T CRPR 1B.3	Upper montane coniferous forest. Elevation: 6,035–8,595 feet. Blooming period: June–October (CNPS 2025).	The closest known observation from 09/07/1995 is located between Canyon Creek and Bowman Road (CDFW 2025a).
Butte County fritillary *Fritillaria eastwoodiae*	FSS-P FSS-T	Generally occurs in dry benches and slopes at elevations less than 5,000 feet. Habitats include serpentine soils in chaparral, cismontane woodland, and lower montane coniferous forest (Sawyer et al. 2009).	Found on a cliff face adjacent to the New Bullards Bar Dam access road and on a cliff-like cut bank adjacent to Forest Service Road 0008-010 (FERC 2019).
Cantelow's lewisia *Lewisia cantelovii*	FSS-P FSS-T CRPR 1B.2	Habitat includes granite cliff faces and rocky outcrops, often associated with seeps in chaparral woodlands or conifer forests at elevations ranging from 1,260 to 4,495 feet. Soil requirements include mesic and granitic soils (Sawyer et al. 2009).	Found growing on steep rocky cliffs in habitat dominated by canyon live oak and some Douglas fir in the northern arm of the New Bullards Bar Reservoir. Six are on TNF lands and 7 on Yuba Water lands (FERC 2019).
Hutchison's lewisia *Lewisia kelloggii ssp. hutchisonii*	FSS-P FSS-T	Habitat includes slate soils or sometimes rhyolite tuff in openings and ridgetops of upper montane coniferous forest. Elevation ranges from 2,505–7,760 feet (Sawyer et al. 2009).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).
Humboldt's lily *Lilium humboldtii ssp. humboldtii*	PNF WL TNF WL	Generally occurs in chaparral woodlands and pine forests at elevations ranging from 650 to 3,610 feet (Sawyer et al. 2009).	Found growing either adjacent to roads or near pedestrian trails, in and around campgrounds in Douglas fir and Ponderosa pine dominated habitat. 26 occurrences within the YRDP boundary, including 10 on TNF, 5 on PNF, 7 on Yuba Water lands and 4 on private lands (FERC 2019).

Table 10.2-10. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
Inundated bog club-moss *Lycopodiella inundata*	TNF WL CRPR 2B.2	Habitat includes coastal bogs and fens, mesic lower montane coniferous forest, and lake margins of swamps and marshes, in an elevation range of 15–3,280 feet (Sawyer et al. 2009).	The closest known occurrence from 12/22/1991 is located approximately 2.75 miles south of Our House Diversion Dam within the east pit of North Columbia Diggins (CDFW 2025a).
Elongate copper moss *Mielichhoferia elongate*	FSS-P FSS-T	Habitat includes roadsides, chaparral, meadows, seeps, cismontane woodland, broadleafed upland and lower montane coniferous forests. Elevation ranges include 3,490-4,595 feet (Sawyer et al. 2009).	The closest known occurrence is located in Shady Creek between Nevada City and North San Juan, approximately 3.75 miles east of the New Colegate Powerhouse (CDFW 2025a).
Shevock's copper moss *Mielichhoferia shevockii*	CRPR 1B.2	Mesic and metamorphic rocky soils in cismontane woodland. Elevation: 2,460–4,595 feet (CNPS 2025).	There are no known occurrences within 5 miles of the Project area (CDFW 2025a).
Tall alpine-aster *Oreostemma elatum*	WL-T CRPR 1B.2	Mesic soils inbogs, fens, meadows, seeps, and upper montane coniferous forest. Elevation: 3,295–6,890 feet. Blooming period: June–August (CNPS 2025)	There are no known occurrences within 5 miles of the Project area. (CDFW 2025a).
Closed-throated beardtongue *Penstemon personatus*	FSS-T CRPR 1B.2	Metavolcanic soils in chaparral and montane coniferous forests. Elevation: 3,490–6,955 feet. Blooming period: June–October (CNPS 2025).	The closest known occurrence from 07/29/2005 is located approximately 0.23 mile southeast of the Middle Yuba River and north of Rattlesnake Creek (CDFW 2025a).
Stebbins' phacelia *Phacelia stebbinsii*	FSS-T CRPR 1B.2	Cismontane woodland, lower montane coniferous forest, meadows and seeps. Elevation: 2,000–6,595 feet. Blooming period: May–July (CNPS 2025).	The closest known occurrence from 07/01/2014 is associated with the northern area of Lake Spaulding (CDFW 2025a).
Sierra blue grass *Poa sierrae*	FSS-P FSS-T CRPR 1B.3	Habitat includes openings in lower montane coniferous forest and in elevations of 1,195 to 4,920 feet (Sawyer et al. 2009).	There are no known occurrences within 5 miles of the YRDP. The closest known occurrence from May 2023 is located approximately 10 miles north near Fall River Campground (CDFW 2025a).
sticky pyrrocoma *Pyrrocoma lucida*	FSS-P FSS-T CRPR 1B.2	Habitat includes alkaline clay soils in lower montane coniferous forest, meadows and seeps, at elevations of 2,295-6,400 feet (Sawyer et al. 2009).	The closest and most recent known occurrence is from a 1935 Smith Collection near Highway 49 (CDFW 2025a).
brownish beaked-rush *Rhynchospora capitellata*	WL-P CRPR 2B.2	Habitat includes mesic soils in meadows, seeps, and montane coniferous forests, at elevations of 145-6,560 feet (Sawyer et al. 2009).	The closest known occurrence from 2004 is located south of Tuscan Way Road, approximately 0.9-mile north of the norther portion of New Bullards Bar Reservoir (CDFW 2025a).
Water bulrush *Schoenoplectus subterminalis*	CRPR 2B.3	Bogs, fens, and the montane lake margins of marshes and swamps. Elevation: 2,460–7,380 feet. Blooming period: June–September (CNPS 2025).	The closest occurrence from 07/17/2009 is approximately 0.49 mile north of the area above Englebright Dam, west of Lake Spaulding (CDFW 2025a).
True's mountain jewelflower *Streptanthus tortuosus* ssp. *truei*	WL-T CRPR 1B.1	Habitat requirements include partial shade on steep rocky slopes in lower montane coniferous forests, at elevations of 2,505-2,820 feet (Sawyer et al. 2009).	The closest known occurrence from 2023 is located 1 mile NE of the end of the Lohman Ridge Diversion Tunnel – south of the Middle Yuba River (CDFW 2025a).
Northern slender pondweed *Stuckenia filiformis* ssp. *alpina*	WL-T CRPR 2B.2	Shallow freshwater marshes and swamps. Elevation: 980–7,055 feet. Blooming period: May–July (CNPS 2025)	There are no known occurrences within 5 miles of the Project area (CDFW 2025a).
Howell's tauschia *Tauschia howellii*	FSS-T CRPR 1B.3	Granitic and gravelly soils in upper montane and subalpine coniferous forests. Elevation: 5,590–8,200 feet. Blooming period: June–August (CNPS 2025).	The closest known occurrence from 08/23/2011 is approximately 0.80 mile north of areas above the FERC Boundary, at Keystone Gap Turnout (CDFW 2025a).
oval-leafed viburnum *Viburnum ellipticum*	CRPR 2B.3	Habitat includes chaparral, cismontane woodland, lower montane coniferous forest in elevations of 705–4,595 feet (Sawyer et al. 2009).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a).

Table 10.2-10. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
INVERTEBRATES			
Monarch butterfly *Danaus plexippus*	FPT	Habitat requirements include milkweed host plant for larval stages and oviposition. A variety of trees may be used during migration periods (USFWS 2020).	There are no known occurrences within 5 miles of the YRDP (CDFW 2025a). Historic occurrences of milkweed just outside of the YRDP FERC boundary, southeast of Camptonville, are present, and there is potential for monarch to occur wherever milkweed occurrences exist, though none have been identified within the Projects Area (USFWS 2020).
AMPHIBIANS			
foothill yellow-legged frog *Rana boylii* pop. 3 – North Sierra Distinct Population Segment (DPS)	ST FSS-T	This DPS is in Yuba, Sierra, Nevada, and Placer counties (USFWS 2021). Generally found in shallow flowing streams and rivers with at least cobble sized substrate. Breeding generally occurs at the margins of wide shallow channels with reduced flow variation near tributary confluences. Specifically, egg masses are placed in low flow locations on or under rocks with preferred substrates being boulders, cobbles, or gravel. Eggs have been found at depths to 34 in. in water velocities of 0 - 0.69 feet per second and at most 40 feet from shore. Maximum water temperature for breeding is 79ºF and 48 to 70ºF is the preferred range. Tadpoles avoid areas below 55ºF and prefer temperatures between 62ºF and 72ºF (Thomson et al. 2016).	Found at Log Cabin and Our House Diversion Dam impoundments, as well as downstream and upstream on Oregon Creek and the Middle Yuba River. Thousands of individuals documented at the Log Cabin and Our House Diversion Dam Impoundments during Yuba Water's sediment management activities in 2014, 2017 and 2020. FYLF populations also occur in the YRDP-affected reaches of Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam, but established FYLF populations likely do not occur in the North Yuba River downstream of New Bullards Bar Dam or in the Yuba River (FERC 2019).
California red-legged frog *Rana draytonii*	FT SSC	Slow moving and shallow water with gradients up to 21.0 percent can support breeding. Upland habitat contains dense riparian vegetation, woody or rock debris, burrows, or other cover within 100 meters of breeding or non-breeding aquatic habitat (USFWS 2022a).	Critical habitat present within the YRDP on the Little Oregon Creek arm of New Bullards Bar Reservoir surrounding Moran Cove (FERC 2019). The closest known occurrence from 10/6/2000 is located approximately 2.5 miles west of the YRDP along Little Oregon Creek, where 6 adults were observed (CDFW 2025a).
Sierra Nevada yellow-legged frog *Rana sierrae*	FE ST FSS-P FSS-T	Inhabits lakes, ponds, meadow streams, isolated pools, and sunny riverbanks in the Sierra Nevada Mountains. Open stream and lake edges with a gentle slope up to a depth of 2 to 3 inches seem to be preferred. Waters that do not freeze to the bottom and which do not dry up are required. The elevation range for this species is 4,500 to 12,000 feet (USFWS 2018).	The closest known occurrence from 06/20/1997 is located approximately 4.5 miles north of the northern portion of New Bullards Bar Reservoir, along Pinkard Creek. Critical habitat in and around Fordyce Creek and Canyon Creek above YRDP.

Table 10.2-10. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
REPTILES			
Northwestern pond turtle *Actinemys marmorata*	FPT SSC FSS-P FSS-T	Occurs in various water bodies including permanent and ephemeral systems either natural or artificial, and permanent ponds, lakes, backwaters and other aquatic habitats with warm, shallow water with cover for hatchlings. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation. (Thomson et al. 2016).	Known from the YRDP. Found on New Bullards Bar Reservoir. Also captured at Our House Diversion Dam impoundments during sediment management activities (FERC 2019). There is one occurrence of northwestern pond turtle in the CNDDB record that is hydrologically connected to the riparian corridor upstream of Englebright Dam in the South Yuba River (Occurrence #1263, CDFW 2025a). There is also one occurrence reported on iNaturalist on the Yuba River upstream of Englebright Dam from 2022 (iNaturalist 2022).
BIRDS			
American goshawk *Accipiter atricapillus (=gentalis)*	SSC FSS- T	Habitat includes lodgepole pine, red fir, mountain hemlock, white pine and mixed conifer dominated forest. Suitable nesting and foraging requires areas with adequate prey, and the ability to nest in mature and old growth forest stands (CWHR 2005a).	Known from the YRDP. Found at New Bullards Bar Reservoir at Slate Creek within a Protected Activity Center (FERC 2019).
little willow flycatcher *Empidonax traillii brewsteri*	SE FSS-T	Suitable habitat includes wet meadows during the summer and montane riparian habitats from 2,000 to 8,000 feet in elevation in the Sierra Nevada and Cascade Ranges. They are most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters (NatureServe, 2017).	Observed at a willow revegetation site in 2021 along Oregon Creek a few miles downstream of Log Cabin Diversion Dam during Yuba Water's sediment management activities.
bald eagle *Haliaeetus leucocephalus*	BGEPA SE, FP, FSS-T	Suitable habitat includes large, old-growth, or dominant live trees with open branchwork, especially ponderosa pine. Requires large bodies of water or rivers with abundant fish, and adjacent snags (CWHR 1999a).	Known from the YRDP. Found at New Bullards Bar Reservoir and downstream of New Colgate Powerhouse. 28 occurrences, including 3-night roosts and 11 hunting perches, during 3 wintering surveys (2011–2012). Two nests were also located on New Bullards Bar Reservoir during relicensing studies (FERC 2019). They have also been sighted on New Bullards Bar multiple times over the past 10 years, including most recently in April 2025 (Cornell Lab of Ornithology 2025).

Table 10.2-10. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
BIRDS (cont.)			
California spotted owl- Sierra Nevada DPS *Strix occidentalis occidentalis*	FCT SSC FSS-T	Suitable habitat includes mature, multi layered forest with complex structure, larger tree (greater than 24 in. diameter at breast height), high canopy cover, and large amounts of woody debris. Typically occurring in mid-elevation ponderosa pine, mixed conifer, white fir, and mixed evergreen forest with a few occurring in the oak woodlands of the western foothills. (USFWS 2022b).	Known from the YRDP Found fifty-four occurrences and eight protected activity centers within or adjacent to the YRDP, including eight home range core areas and one spotted owl habitat area, as defined by the Forest Service. Occurrences and protected activity centers are adjacent to: Our House Diversion Dam and impoundment, Lohman Ridge Diversion Tunnel, Log Cabin Diversion Dam and impoundment, Camptonville Diversion Tunnel, New Bullards Bar Reservoir, New Colgate Powerhouse and Switchyard, Schoolhouse Campground, Hornswoggle Group Campground, Dark Day Boat Launch, Dark Day Campground and Day Use Area, and Schoolhouse Trail. Fifty-four recorded occurrences were within 0.25-mile of New Bullards Bar Reservoir and New Colgate Power Tunnel; four were within a protected activity center, four were within a home range core area, and one was within a spotted owl habitat area within 0.25-mile of New Bullards Bar Reservoir. A protected activity center and home range core area is located along the New Colgate Power Tunnel and another protected activity center and home range core area is located at Our House Diversion Dam (FERC 2019).

Table 10.2-10. (Continued).

Species	Special-Status Designation	Potential Habitat Within Proposed YRDP Boundary	Nearest Documented Occurrence to the Proposed YRDP
MAMMALS			
Townsend's big-eared bat *Corynorhinus townsendii*	SSC FSS-T	This species has a broad range in the western U.S., occupying montane forests dominated by pine, fir, and aspen trees as well as subalpine areas and arid desert habitats. Suitable habitat is present within the YRDP (Adams 2003, Kunz and Martin 1982).	Known from the YRDP. Found within YRDP Boundary during 2012 studies (acoustic detections). This species is known to occur at Camptonville Tunnel, below New Bullards Bar Dam, and New Colgate Powerhouse (FERC 2019).
North American porcupine *Erethizon dorsatum*	SSC	Wide range of habitats from woodlands, grasslands, deserts and tundra (USFWS 2025).	The closest known occurrence from 09/30/2010 is located approximately 0.67 mile south of Lake Spaulding (CDFW 2025).
North American wolverine *Gulo gulo luscus*	FE ST	Wolverines typically occur in mountainous areas that receive a significant amount of snowfall. Wolverines can occur at lower elevations, but only in areas that receive a significant amount of winter and spring snowfall in higher latitudes (USFWS 2025).	The closest known occurrence from 1971 is approximately 1.15 miles south from the Middle Fork Yuba River, near Jackson Meadows Reservoir (CDFW 2025).
Sierra Nevada red fox *Vulpes vulpes necator*	FE ST	High elevation mountains in the Sierra Nevada and Cascade Mountain ranges in California (USFWS 2025).	There are no known occurrences within 5 miles of the Project area (CDFW 2025).

Key:

Federal:
(BGEPA) Bald and Golden Eagle Protection Act
(FE) Federally Endangered
(FT) Federally Threatened
(FSS-T) Forest Service Sensitive - Tahoe National Forest
State:
(FP) Fully Protected
(SCE) State Candidate Endangered
(SE) State Endangered
(SSC) State Species of Special Concern
(ST) State Threatened

10.3 Regulatory Setting

This section summarizes the federal, state, regional, and local laws, regulations, policies, and plans relevant to evaluation of the Proposed Projects' impacts on biological resources.

10.3.1 Federal

10.3.1.1 Endangered Species Act

The federal Endangered Species Act (ESA) was passed by the U.S. Congress in 1973 to protect and recover imperiled species and the habitat upon which they depend (50 C.F.R. § 17.12 for listed plants, 50 C.F.R. § 17.11 for listed animals, and various notices in the Federal Register for proposed species and designated critical habitats). The federal ESA is administered by the USFWS and NMFS. The federal ESA lists protected species in danger of extinction throughout all or a significant region of the species range as "endangered" and species likely to become endangered as "threatened" within the foreseeable future (USFWS 2016). The term "take," under the Federal ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" with an endangered or threatened species (USFWS 1973).

Consultation with USFWS is required when a proposed action of a project has the potential to affect federally listed species, as well as designated critical habitat for those species. FERC, as the lead federal agency for Section 7 ESA consultation related to the YRDP and Narrows Projects, has conducted pertinent prior consultations with resulting measures to avoid and minimize the potential to affect federally listed species.

Informal Section 7 ESA consultation with the USFWS would be conducted by FERC as part of the NEPA compliance. Yuba Water, as FERC's designated non-federal representatives, initiated informal Section 7 ESA consultation with the San Francisco Bay Delta USFWS office and requested the USFWS' concurrence on May 31, 2018, for determinations that the Proposed YRDP may affect, but is not likely to adversely affect the CRLF, and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). The USFWS provided its concurrence on June 21, 2018, provided FERC includes in the new License various USFWS recommended protective measures for each endangered species, which have been incorporated into the Proposed YRDP Project as described in Chapter 2 and Appendix 2D.[7]

10.3.1.2 Migratory Bird Act

The Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.) protects migratory bird species and prohibits take (i.e., harm or harassment) through setting hunting limits and seasons and protecting occupied nests and eggs. The USFWS administers the Migratory Bird Treaty Act and reviews actions that may affect species protected under the act.

10.3.1.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) is the primary federal law protecting eagles. BGEPA prohibits the take of eagles without a permit (16 U.S.C. §§ 668-668c). BGEPA defines

[7] FERC Accession [20180622-5095].

take as to "pursue, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb," and prohibits the take of individuals and their parts, nests, or eggs (USFWS 1973). In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present. If, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment, those impacts would qualify as take under the BGEPA definition.

The USFWS oversees enforcement of this act. USFWS is authorized to permit the take of eagle nests that interfere with resource development or recovery operations subject to regulations that became effective on November 10, 2009 (50 C.F.R. 22.26, 22.27). Under these rules, the USFWS can issue permits that authorize individual instances of take of bald and golden eagles when the take is associated with, but not the purpose of, an otherwise lawful activity and cannot practicably be avoided.

10.3.1.4 Clean Water Act: Section 401, 402, and 404

The CWA as amended in 1972, is described in Chapter 8, Surface Water Quality. Regarding the biological resources impact assessment, key components of the CWA pertain to water quality and dredge/fill placement in wetlands and other waters of the United States. "Other waters of the United States" include lakes, rivers, streams, and their tributaries meeting the criteria under the CWA and the implementing regulations.

The term "Waters of the United States" is an encompassing term used by the USACE and EPA for areas that are subject to federal regulation under the CWA, Sections 404 and 401, which refer to wetland and non-wetland features. Wetlands that meet the criteria of the new Waters of the United States rule[8] are managed under the jurisdiction of the USACE and EPA pursuant to Section 404 of the CWA. The definition developed by the USACE considers those areas which ". . . are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" and have a surface connection to relatively permanent waters. Special aquatic sites, such as vernal pools, are also pursuant to Section 404. Waters subject to CWA Section 404 also require a Water Quality Certification from the SWRCB or RWQCB under Section 401 of the CWA. The extent of their jurisdiction over wetlands and other Waters of the United States is the same as that of USACE.

10.3.1.5 Plumas and Tahoe National Forest *Land Management Plan*s

10.3.1.5.1 Plumas National Forest

The Plumas National Forest (PNF) *Land and Resource Management Plan* (1988) defines PNF Goals and Policies, and the Objectives, Standards and Guidelines, Management Prescriptions, and Management Area Direction, needed to implement these Policies and achieve these Goals. PNF Goals and Policies related to biological resources include maintaining habitat for vertebrate

[8] The USACE and EPA published a final rule for Waters of the United States on August 29, 2023, which incorporated the Supreme Court's May 25, 2023, decision in *Sackett v. Environmental Protection Agency*. The final rule was put into effect on September 8, 2023, and remains in effect in California at this time (EPA 2025).

species, providing habitat for endangered species, and improving and protecting habitat for designated emphasis and harvest species. Botanical goals include assuring the continuous and viable presence of all seral stages of all native plant communities occurring on the forest.

Wildlife objectives include providing suitable habitat for bald eagles, peregrine falcons, prairie falcons, osprey, golden eagle, goshawk spotted owl, and deer. Forest-wide standards and guidelines intend to provide diversity of vegetation throughout PNF to support viable populations of all fish, wildlife, and plant species. More specifically, standards and guidelines focus on maintaining viability of species dependent on snags, dead and down material, meadow-conifer ecotones, and hardwoods. Standards and guidelines are provided for the avian species mentioned above, as well as Sierra Red Fox, Wolverine, Marten, Greater Sandhill Crane, Great Gray Owl, Willow Flycatcher, deer, trout, wild trout streams, and sensitive plant species.

10.3.1.5.2 Tahoe National Forest

The Tahoe National Forest (TNF) *Land and Resource Management Plan* (1990) includes Management Direction related to biological resources. It mandates that Forest Plans and alternatives would identify 'Management Indicator Species' (MIS), and fish and wildlife resource planning would include the following elements:

A. MIS would be used to evaluate the effects of management on fish and wildlife resources and species selected shall include where appropriate:

    1) Endangered and threatened plant and animal species identified on State and Federal lists.
    2) Species with special habitat needs that may be influenced significantly by planned management programs.
    3) Species that are commonly hunted, fished, or trapped.
    4) Non-game species of special interest.

B. Biologists from State fish and wildlife agencies, as well as other Federal agencies, shall be consulted to coordinate planning for fish and wildlife.

C. Population trends of the MIS would be monitored and relationships to habitat changes determined. The monitoring would be done in cooperation with State fish and wildlife agencies to the extent practical.

D. Critical habitats for threatened and endangered species shall be identified and protected.

10.3.2 State

10.3.2.1 California Endangered Species Act

CDFW has jurisdiction over plant and wildlife species listed as State threatened or endangered under the California Endangered Species Act (CESA) pursuant to § 2080 of the Fish and Game Code (F.G.C.). CESA prohibits the take of State-listed threatened or endangered species. CDFW

defines take as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." (USFWS 1973). CDFW may authorize take under CESA through § 2081 of the F.G.C. if that take is incidental to otherwise lawful activities and if certain conditions are met (CDFW 2024c). For species listed under the ESA and CESA on which the USFWS has issued an assessment of potential effects, the State is encouraged to rely on that assessment.

The State of California designates SSC as wildlife and plant species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, and/or educational values. Under CESA, these species do not have legal protection (CDFW 2025b); however, impacts on these SSC are analyzed for CEQA purposes. In addition, prior to the enactment of CESA, CDFW created a designation to provide additional protection to rare species. This designation remains today and is referred to as "fully protected" species, and those listed "may not be taken or possessed at any time" (CDFW 2025c). Impacts on fully protected species are also analyzed for CEQA purposes.

10.3.2.2 CEQA Guidelines Section 15380

The CEQA Guidelines mandates the assessment and disclosure of potential Project-related impacts to federal and/or State listed species, as well as species not listed federally or by the State that may be considered rare, threatened, or endangered, if the species can be shown to meet specific criteria for listing outlined in CEQA Guidelines § 15380 (b). Species that meet these criteria can include "candidate species," species "proposed for listing," and "species of special concern." Plants appearing in the CNPS California Rare Plant Ranking System meet CEQA's Guidelines § 15380 criteria.

CEQA's Guidelines § 15380 was included to address a potential situation in which a public agency is to review Proposed Projects that may have a significant effect on, for example a "candidate species," which has not yet been listed by the USFWS or CDFW. Therefore, CEQA enables an agency to protect a species from significant Project impacts until the respective government agencies have had an opportunity to list the species as protected, if warranted.

10.3.2.3 Porter-Cologne Water Quality Control Act

The Porter-Cologne Act places the State-level responsibilities for water rights and water quality protection on the SWRCB and directs the nine RWQCBs to develop and enforce water quality standards within their jurisdiction. The Proposed Projects are located within the jurisdictional boundaries of the CVRWQCB.

The Porter-Cologne Act requires any entity discharging waste, or proposing to discharge waste, within any region that could affect the quality of the "Waters of the State" to file a "report of waste discharge" with the appropriate RWQCB. The appropriate RWQCB then would issue a permit, referred to as a waste discharge requirement. Waste discharge requirements implement water quality control plans and take into consideration the Beneficial Uses to be protected, the WQC reasonably required for that purpose, other waste discharges, and the need to prevent nuisances (California Water Code § 13263) (SWRCB 2024).

California Fish & Game Code § 89.1, through referral to California Water Code § 13050, defines Waters of the State as "any surface water or groundwater, including saline waters, within the

boundaries of the state." Riparian plant communities associated with stream channels in the Project Area could also be considered jurisdictional by the RWQCB if they are in an area which includes Waters of the State (CalTrans 2025). If a Project requires a Water Quality Certification, the SWRCB or RWQCB would incorporate requirements to also comply with the Porter-Cologne Act. Aquatic features that do not fall under USACE jurisdiction (e.g., isolated features, ditches, features excavated in uplands) would be considered Waters of the State.

In April 2020, the SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: (1) a wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a water of the State; (3) wetland delineation procedures; and (4) procedures for the submittal, review and approval of applications for WQCs and waste discharge requirements for dredge or fill activities.

10.3.2.4 California Fish and Game Code

The California F.G.C. includes multiple sections that regulate fish and wildlife, and their aquatic habitat which were contemplated in the impact discussion. Key sections are discussed below. Under F.G.C. Code §§ 1600-1616, CDFW has the authority to regulate actions that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.

Nesting migratory avian species are protected under F.G.C. §§ 3503, 3503.5 and 3800, which prohibit the take, possession, or destruction of birds, their nests, or eggs. Implementation of take provisions require that disturbance related to the Proposed Projects, within active nesting territories, be reduced or eliminated during critical phases of the nesting cycle (approximately March 1–August 31). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young), or the loss of habitat upon which birds are dependent, is considered "taking", and it is potentially punishable by fines and/or imprisonment (California Legislative Information 2024). Such taking would also violate federal law protecting listed migratory birds under the Migratory Bird Treaty Act.

CDFW also regulates activities occurring within State waters. Activities that result in diversion or obstruction of the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake require that the Project applicant enter into a Lake or Streambed Alteration Agreement (LSAA) with CDFW under Section 1602 of the California Fish and Game Code.

10.3.3 Local

The YRDP, the Narrows Project, and affected reaches are located within Nevada, Sierra, and Yuba counties, primarily on federal lands managed by the Forest Service (57% of total), and lands owned and managed by Yuba Water (40% of total); remaining acreage is comprised of federal lands managed by USACE, state lands, and other privately owned lands.

10.3.3.1 Nevada County General Plan

The *Nevada County General Plan* (Nevada County 1995) includes the following summarized policies related to biological resources that are relevant to the Proposed Projects:

- Policy 6.5 – Recreational use of urban open space shall be designed to minimize impact on sensitive environmental and/or biological values.
- Policy 6.9 – Development standards for Project design, grading, construction and use would consider non-disturbance of and open space setbacks from biological resources.
- Policy 13.2A - Project review standards require development of a biological inventory to determine special status species or habitat that could be affected by a Proposed Project. If a Project could affect, a *Habitat Management Plan* may be required, which must comply with FESA and CESA.
- Policy 13.2B - Prohibits degradation of habitat or reduction in protected species by any Project that may remove more than 1 acre of riparian or wetland habitat.
- Policy 13.4A - No net loss or habitat functions should be caused by Project affecting more than 1 acre of land where rare and endangered species and wetlands are identified.
- Policy 13.4D – When needed to protect rare and endangered species and wetland habitat, the County would develop a *Habitat and Management Plan*.
- Policy 13.9 – The County would adopt regulations to protect native oak trees with a trunk diameter of 36 in. or greater.

10.3.3.2 Sierra County General Plan

The *Sierra County General Plan* (Plan, Planning Concepts 1996, updated 2012) defines as follows, the goals, policies, implementation measures, and guidelines that are related to biological resources relevant to the Proposed Projects.

- Plants & Wildlife Goal - It is the County's goal to protect and defend its abundant and diverse plant and animal species (13-36).
- Policy 29 - To the extent possible based on current scientific knowledge, utilize mitigation guidelines which are specific to the species and habitats in the County.
- Implementation Measure 29 - Utilize the Biological Mitigation Guidelines contained at the end of this section as a basis for the formulation of avoidance and mitigation measures. Actual measures required may be modified based on verifiable evidence specific to the Project site under review.

Most of the Plan guidance related to biological resources is found in the Biological Mitigation Guidelines, which are summarized below. Guidelines were developed by amending the Tuolumne County Wildlife Handbook for Sierra County, with assistance from the CDFW.

10.3.3.2.1 GENERAL GUIDELINES FOR WILDLIFE HABITAT

- Sierra County would attempt to maintain a continuous network of valuable wildlife

habitat by maintaining wildlife corridors that connect higher value, larger, tracts of land.

- Sierra County would require mitigation for direct, indirect, and cumulative Project impacts to wildlife.
- Sierra County would prioritize mitigation measures by adjacency of like habitat to that of a Project site, improvement of the same habitat in a different location, improvement of dissimilar habitat at or adjacent the Project site, and finally, improve alternative habitat types at a location away from the Project site.
- The best model for habitat restoration is historic representation of that habitat locally.
- Some modification from historic conditions may be required, but they should be minimized.
- Priority should be given to natural rather than artificial ecosystems in choosing mitigation options.
- The range of mitigation options vary with the size of the parcel involved. Larger parcels may offer more mitigation options than smaller parcels.
- Mitigation options vary with the intensity of development within a parcel.
- Sierra County should protect habitat through cooperation with CDFW on in stream flow and stream bed alteration agreements, that also include erosion control measures and riparian setbacks.
- Sierra County should coordinate with Forest Service to identify and protect location of special wildlife species nesting, denning, and roosting sites.

10.3.3.2.2 SPECIFIC MEASURES APPLYING TO PROJECTS AFFECTING USE AREAS OF SPECIAL SPECIES

Sierra County should consult CDFW and/or USFWS if there are potential impacts to threatened, endangered, or other special species, to assess impacts and determine appropriate mitigation.

Bald Eagle

- If there are trees within or near a project that are regularly used as roosting or feeding perches, County would limit activities within 0.25-mile of perches, avoid impacts to perching trees, enforce a 0.25-mile building setback for important perching sites, and plan development to avoid increasing human activity around important perching sites when eagles are present.
- Ensure eagles' food supply isn't diminished by restricting use of pesticides and restricting boating when eagles are present.

Peregrine Falcon

- If a peregrine falcon breeding site is identified, any mitigation would be determined in consultation with appropriate agencies.

Great Gray Owl

- Prohibit disturbance to meadows within breeding territories
- Prohibit major disturbance to forests bordering such meadows
- Prohibit disturbance to any nest tree that has been active in the past 3 years, and that is still suitable for nesting.
- Disturbance within breeding territory must be detailed in a management plan that is approved by the appropriate agencies.
- Mitigation should be developed in consultation with appropriate agencies, to address any impacts to a regularly used wintering area.

Heron Nesting Colonies

- Prohibit construction within 0.25-mile of any colony during nesting season.
- Building setback of 1000 feet from colony sites active within last two years. Setback can be reduced to 300 feet if the colony is inaccessible due to topographic or water barriers.
- Full habitat replacement is required elsewhere if setback is not feasible.

Wood Duck Nesting Sites and Wintering Concentrations

- Setbacks of 200 feet from water features in nesting and wintering areas active within last two years.
- Prohibit disturbance to nesting trees active within past two years, that are still suitable for nesting.

Other Raptors

- Provide species-specific setbacks around nest sites that have been active within last three years.
- Limited clearing and timber harvest are permitted within setbacks under conditions specified for raptors.
- Prohibit all construction activities within species-specific distances and nesting seasons.
- Protect black-shouldered kite and long-eared owl roosting sites by requiring buffer zones and within certain time frames, as defined by the General Plan.
- Setbacks may be reduced, in consultation with a qualified biologist, based on nest- or roost-site visibility and inaccessibility.
- Prohibit nest- and roost-site disturbances.

Nest Sites of Other Target Birds

- Building and clearing setbacks and provisions for working within these setbacks, are defined for pileated woodpecker, double crested cormorant, and purple martin.
- Human disturbances are prohibited within these setbacks during species-specific breeding

season.

- Yellow-breasted chats are protected by existing riparian setbacks.
- Willow flycatcher nesting territories shall be protected by preserving meadow habitat and by regulating livestock grazing.
- Disturbance to nests or nesting trees, active within the last two years and still suitable for nesting, is prohibited for all target species.

Breeding Sites of Target Amphibians

- County would require appropriate measures to maintain existing water quality and supply, and to prohibit introduction of non-native fish or amphibians.

Trout

- County would consult with Department of Fish and Wildlife if standard streams and riparian habitat are insufficient to protect trout species.

Migratory Deer

- County would maintain large-parcel zoning (80 acres or more) in highly critical winter range.
- Maintain large-parcel zoning (40 acres or more) in major mapped migration corridors.
- Building setbacks of 1,000 feet are required for mapped fawning areas.
- Building setbacks of 500 feet are required for mapped major migration corridors and holding areas.

General Deer Use Areas

- Includes all lands within County not included in the above migratory deer measures.
- County would use zoning, conservation overlays, and setbacks to protect deer use features.
- County may require that building sites be clustered on the least environmentally-sensitive portion of a parcel.
- Require that all dogs be leashed or enclosed.
- Fencing restrictions include provisions for barbed wire, hogwire, and deer-proof fences.
- All lot splits would include habitat improvement measures.
- Potential barriers to deer movement such as pipelines or canals, would be minimized by burying facilities, providing deer crossings, etc.
- All newly created roads, that are not residential or retail business development, would be closed by locked gate.

10.3.3.3 Yuba County 2030 General Plan

The *Yuba County 2030 General Plan* (Plan, 2011) is the first update of all Plan elements since Yuba County's first Plan, adopted in 1969. The Plan defines Elements, Open Space Designations, Goals, Policies, and Actions related to biological resources that are relevant to the Proposed Projects.

Critical Habitat Open Space Designation

To provide habitat for rare, threatened, and endangered species located in Yuba County. Although certain recreational and other public uses may be consistent with the intent to provide for natural habitat, the County anticipates that these lands would remain mostly undeveloped. Critical Habitat includes areas designated by the USFWS for vernal pool species and California red-legged frog and critical habitat identified by the CDFW. The USFWS also identifies Critical Habitat along segments of the County's streams and rivers for use by steelhead and Chinook salmon. These habitat areas are covered under the designation "Water and Groundwater Recharge Areas," described below.

Water and Groundwater Recharge Areas Open Space Designation

To protect water quality and habitat associated with rivers, lakes, reservoirs, and streams. Recreational uses and public access are appropriate along the County's waterways, so long as the design and use does not substantially and adversely affect groundwater recharge, scenic views, cultural or biological resources, or natural habitat.

Yuba County General Plan Natural Resources Goal (Goal NR5.) intends to, "*Protect and restore habitat for special-status species that have the potential to occur in Yuba County."* Applicable policies under this goal include:

- Policy NR5.1 – New developments that could adversely affect special-status species habitat shall conduct a biological resources assessment and identify design solutions that avoid such adverse effects. If, after examining all feasible means to avoid impacts to special-status species habitat through Project design, adverse effects cannot be avoided, then impacts shall be mitigated in accordance with guidance from the appropriate state or federal agency charged with the protection of the subject species, including pre-construction surveys conducted according to applicable standards and protocols, where necessary.
- Policy NR5.4 - New developments shall be located and designed to preserve and incorporate existing native vegetation to the maximum extent feasible. Fire safety standards may override consideration of retaining existing vegetation in certain circumstances.
- Policy NR5.5 - The County would support cooperative restoration, development, and promotion of natural resources with the U.S. Fish and Wildlife Service, the Army Corps of Engineers, the Bureau of Reclamation, the Forest Service, and other public agencies with an interest in the Yuba County's water and wildlife assets.

- Policy NR5.6 - The County would seek funding to enhance and restore habitat along the Yuba River, in coordination with development of recreational facilities and public access.
- Policy NR5.7 - New developments and public investments near Yuba County's streams and rivers shall be designed to avoid tree removal, erosion, or other modifications that would adversely affect salmonid habitat.
- Policy NR5.8 - New private developments adjacent to riparian areas shall provide a buffer designed and maintained to preserve existing wildlife habitat; provide habitat conditions favorable to native local wildlife; restrict activities that may adversely affect wildlife habitat quality; and restore degraded habitat, where feasible.
- Policy NR5.9 - New developments shall be designed to avoid the loss of jurisdictional wetlands. If loss is unavoidable, the County would require applicants to mitigate the loss on a "no net loss" basis through a combination of avoidance, minimization, restoration, and/or constructed wetlands, in accordance with federal and state law.
- Policy NR5.13 - New developments that could adversely affect wildlife movement corridors shall conduct a biological assessment and avoid placing any temporary or permanent barriers within such corridors, if they are determined to exist on-site. Avoiding barriers to wildlife movement may be accomplished at the Project or community plan level.
- Policy NR5.14 - The County would discourage development that would substantially and adversely affect the designated winter and critical winter range of the Mooretown or Downieville deer herd.
- Policy NR5.15 - Roads, water lines, sewer lines, drainage facilities, and other public facilities constructed to serve unincorporated County development shall be located and designed to avoid substantial impacts to stream courses, associated riparian areas, and wetlands, to the greatest extent feasible.

Yuba County General Plan Natural Resources Goal (Goal NR10.) intends to, "*Preserve the County's trees and other vegetation that provide aesthetic and habitat benefits."* Policies under this goal pertinent to the Projects include;

- Policy NR10.1 – Preserve existing oak trees that have a diameter at breast height of 6 in. or greater and all other trees of a diameter at breast height of 30 in. or greater.

10.3.3.4 County Codes

Regarding biological resources, Nevada County Code 10.14.040 directs the public to avoid introducing any aquatic invasive species into waters of Nevada County to preserve aquatic species and habitat. Section 12.04.212 instructs applicants to provide a Biological Inventory, and to further provide a *Habitat Management Plan* if the Project would adversely affect a protected species or their habit. Section 12.03.300 requires commercial cannabis cultivation applicants to provide assessments of locations of sensitive biological resource areas. 12.04.215 intends to minimize tree removal and protect existing trees during construction by requiring applicants to provide a Biological Inventory.

Yuba County Code 11.44.060 includes provisions for the protection of sensitive habitat areas, It

specifically requires consideration of oak and other trees in Subdivision Design planning and may result in preservation in place and monitoring of grading and tree trimming. Trees within a proposed right-of-way may only be removed to protect public safety, or to allow installation of public facilities.

10.3.4 Habitat Conservation Plans and Natural Community Conservation Plans

No Habitat Conservation Plans or Natural Community Conservation Plans have been adopted within the Proposed Projects Boundary or on affected reaches, including along the lower Yuba River to the confluence with the Feather River. There are no Habitat Conservation Plans or Natural Community Conservation Plans within 5 miles of the Projects Area (USFWS 2020, CDFW 2024d).

10.4 Impact Assessment Methodology

The evaluation of potential impacts on sensitive natural communities and special-status species in the Project Area was based on a review of the available literature, relicensing study data, data from FERC filings from the Narrows No. 1 and No. 2 Transmission Line project (FERC Project No. 2678), relicensing data for the Yuba-Bear Hydroelectric Project (FERC No. 2266) and Drum-Spaulding Hydroelectric Project (FERC No. 2310) and other available data, regarding the status and known distribution of sensitive communities and special-status species in the Project Area. In addition, impacts were evaluated using data and modeling results from Yuba Water's YRDP, including estimated reservoir stages and downstream flows. FERC's 2019 FEIS analysis of the Proposed YRDP was also utilized to describe and discuss potential impacts, as the analysis was built from Yuba Water's Proposed YRDP relicensing data and documents, including the license application. Where relevant, analysis from the USFWS' evaluation on ESA-listed species in 2018 is also included. The methods for analysis of impacts on biological resources are based on professional standards and information cited throughout this section. The key effects were identified and evaluated based on the environmental characteristics of the Projects Area and the expected magnitude, intensity, and duration of activities related to the construction and operation of the Proposed Projects, the No Project Alternative, and the two Project alternatives.

Direct, non-flow-related indirect, and indirect impacts on natural communities and special-status species are considered in the analysis. Direct, non-flow-related indirect, and indirect impacts can be either permanent or temporary.

Permanent direct impacts on biological resources were quantified using the estimated amount of land cover that would be converted as a result of construction of the new YRDP Project facilities compared to existing conditions. Temporary direct impacts on biological resources during construction activities were quantified using the estimated amount of land cover that would be temporarily disturbed during YRDP construction that would be restored to pre-construction conditions within one year of disturbance.

Direct impacts on biological resources identified within the Project Area were determined using GIS software. The Project Area and associated impact areas were overlaid on the vegetation community, wildlife habitat, and wetland data to quantify the permanent and temporary impacts

associated with the construction and operation of the Proposed Projects and the alternatives. Impacts on occurrences of special-status plants known to occur in the Project Area were determined by overlaying the Project Area over the mapped occurrences and determining the area of overlap. If information about the presence of a particular special-status species is unknown, but suitable habitat is present, then the impact analysis took a conservative approach by inferring presence of special-status species.

10.4.1 Construction

Multiple construction activities associated with the Proposed YRDP are scheduled throughout the term of the Proposed Projects. Most of the construction would occur within already developed or disturbed areas. Construction impacts in those areas would consist only of temporary impacts, such as habitat disturbance in construction areas, noise, fugitive dust generated by the movement of earth and the permanent effects from constructing new facilities, etc. However, multiple projects, including Kelly Ridge Campground, New Colgate Powerhouse River Access, and the West Shoreline Trail would occur in undeveloped areas and result in permanent impacts, including habitat conversion.

Construction impacts are restricted to construction of facilities and associated construction access and staging. Direct and indirect impacts on special-status species and their habitats were assessed using the estimated amounts of suitable habitat that would be converted by construction or indirectly disturbed during construction compared to existing conditions. In general, permanent and temporary impacts on potential habitat for special-status species are overestimated because the entirety of the land cover is considered affected even when specific habitat requirements may be absent at specific locations. Proposed construction areas have a buffer of 500 feet around them in which direct and indirect impacts on wildlife and botanical resources were assessed, except for wetlands and riparian areas, which were assessed within the currently known footprint of proposed construction areas.

There would be no construction activities associated with the Narrows Project, so there are no construction impacts attributable to the Narrows Project. Because of this, Narrows construction impacts are not analyzed further in this chapter.

10.4.2 Operations

Project operations include not only operation and use of Project facilities and recreation areas, but also the implementation of all proposed measures and plans in the new License. Operation under the Proposed Projects, Alternative 1, and Alternative 2 also would include periodic maintenance activities, such as worker visits to clear debris from the intake structures and changes to reservoir surface water levels and water releases. The measures and plans in the new licenses include provisions for sensitive resources, such as special-status species and sensitive natural communities, that may prevent or offset potential impacts from Proposed Projects operation. They also offer additional benefits to sensitive resources, including managed flows during certain seasons of the year. The operations analysis evaluates impacts on sensitive communities, riparian habitat, and special-status species related to hydrologic changes from the Proposed Projects including changes in flows downstream from New Bullards Bar Dam, Log Cabin Diversion Dam, Our House Diversion Dam and in the lower Yuba River, and changes in surface water supply availability to

Yuba Water member units. Potential impacts are assessed based on evaluation of model results from Yuba Water's YRDPM. Information about the YRDPM, including assumptions, inputs, and model limitations, are described in Section 4.5.1 in Chapter 4, Framework for Environmental Analysis. The YRDPM includes representation of a long-term period of record of hydrology (water year 1970 through 2021), member unit water supply demands, current and proposed facilities, and current and proposed operational requirements. Changes in simulated flows and water supply deliveries as a result of each alternative, relative to the bases of comparison, are used to determine potential impacts.

To assess potential operational impacts on biological resources, including both direct and indirect impacts within and downstream of the reservoirs and impoundments, the Projects Area also consists of the downstream portions of the Yuba River to its confluence with the Feather River including its associated riparian/wetland corridor. The Projects have the potential to affect the timing and quantity of water flowing through multiple river sections, which could result in direct or indirect impacts on existing plant and wildlife species. The impact analysis for amphibians, particularly as it relates to FYLF, uses existing information developed as part of FYLF surveys and habitat modeling conducted in the Middle Yuba River and Oregon Creek for the basis of comparison (see 10.5.2.1.1).

Hydrologic modeling was completed and analyzed to estimate flow volumes, reservoir drawdowns, reservoir WSEs, and reservoir discharges that would occur due to the Proposed Projects and alternatives as they relate to key life stages of special-status species and their habitats. Assessments of operational impacts on vegetation and special-status wildlife were based on comparisons between daily and average monthly modeled flow and reservoir WSE/storage exceedance data (depending on species) under the Proposed Projects and alternatives relative to the bases of comparison.

The programmatic analysis of indirect operations-related impacts evaluated in reaches and reservoirs upstream of the YRDP in the Middle Yuba River and South Yuba River watersheds, which could occur as a result of YB/DS operations under Alternative 1, include review and application of hydrological simulations to address special-status species and their habitat conditions. For the programmatic analysis of YB/DS operations under Alternative 1, other operations-related impact indicators in YRDP reaches upstream of Englebright Dam included changes in available simulated or estimated hydrology during April and May of Dry and Critical WYs sufficient to be expected to substantially affect special-status species and their habitat in the Middle Yuba River below Jackson Meadows Dam, Canyon Creek below Bowman Lake and the BSCDD, Fordyce Creek below Fordyce Lake Dam, and the South Yuba River below Spaulding Dam to Englebright Reservoir. In general, changes in simulated daily flow time-series under potential Alternative 1 conditions relative to the Future Baseline were used to identify whether substantial changes in the hydrograph would necessarily occur with sufficient frequency to substantially affect special-status species and their habitat, with consideration of the variation in simulated flows under the Future Baseline during Dry and Critical WYs as well as during wetter WYTs.

10.4.2.1.1 Foothill Yellow-Legged Frog Habitat Modeling

As part of the FERC YRDP relicensing study implementation in 2012, Yuba Water performed River 2D Foothill Yellow-legged Frog Habitat Modeling to simulate the relationship of stream flows to FYLF habitat suitability – defined by water depth and velocity, and substrate – for a site on each of two stream reaches where FYLF breeding is known to occur:

- Middle Yuba River - Our House Diversion Dam Reach at RM 12.4 (0.2-mi downstream of Our House Diversion Dam)
- Oregon Creek - Log Cabin Diversion Dam Reach at RM 3.4 (0.9-mi downstream of Log Cabin Diversion Dam)

These two sites were selected in collaboration with interested and available stakeholders (e.g., CDFW, USFS, and NGO's) corresponding to known locations of FYLF documented during surveys conducted in the spring of 2011 and 2012 for Study 3.4 Special-Status Amphibians – Foothill Yellow-legged Frog Surveys. The site in Oregon Creek extended from RM 3.3 to RM 3.4 and included approximately 813 square meters. The second site in the Middle Yuba River extended from approximately RM 12.4 to RM 12.5 and included approximately 3,251 square meters.

In collaboration, Relicensing Participants identified area of interest (AOI) regions in each modeling domain from which simulation analyses would be conducted. Simulation flows to be modeled in each study site were selected in collaboration with the Relicensing Participants based on review of the hydrologic records downstream of Log Cabin Diversion Dam and Our House Diversion Dam. Simulation flows in Oregon Creek ranged from 0.14) to 11.30 cubic meters per second (cms) (5.0-400.0 cubic feet per second, or cfs) while simulation flows in the Middle Yuba River ranged from 0.59 cms to 42.48 cms (21.0-1500.0 cfs).

Weighted Usable Area (WUA) for each site was calculated at all simulation flows for the egg mass and tadpole life stages to generate lifestage-specific WUA-discharge relationships. On Oregon Creek and the Middle Yuba River, WUA generally shows a decreasing trend as flows increase. However, the rate of change in the amount of suitable habitat slows after reaching flows of 3.54 cms (125.0 cfs) on Oregon Creek and 7.08 cms (250.0 cfs) on the Middle Yuba River.

Information gathered during the FYLF surveys, existing information on temperature thresholds for FYLF, and habitat suitability results developed as part of the FYLF 2D habitat modeling were used to analyze the potential impacts to FYLF under the Proposed Projects and alternatives relative to the bases of comparison.

10.4.2.1.2 Riparian Habitat Assessment

Potential impacts to riparian resources, including riverine wetlands, associated with each alternative are analyzed primarily on the basis of changes in stream flow (i.e., discharge), which affects the stage and lateral reach of the river water surface level. Stage-discharge relationships at representative locations of reaches upstream of Englebright Reservoir were established during 2012 surveys and provide a basis for understanding changes in flow relative to riparian vegetation, which is generally present between the elevations associated with the bankfull and floodprone flows. Table 10.4-1 indicates the average and range of bankfull and floodprone flows for each

reach. Flow comparisons between the alternatives and bases of comparison are included in Appendix 4B. On the lower Yuba River downstream of Englebright Reservoir flows were modeled (cbec 2013) to indicate the stage of various flows; at 5,000 cfs, flows begin to exceed bankfull and reach floodplains.

Table 10.4-1. Average bankfull and floodprone flows for the Middle Yuba River, Oregon Creek, North Yuba River, and the Yuba River upstream of Englebright Reservoir.

Reach Name	Bankfull (cfs)		Floodprone (cfs)	
	Average	Range	Average	Range
Middle Yuba River	328	224-503	20,725	1,938-8,640
North Yuba River	316	217-416	3280	2,346-4,213
Yuba River Upstream of New Colegate	246	239-260	4,692	2,118-8,584
Yuba River Downstream of New Colegate	2,771	2,506-3,108	41,395	39,734-43,141
Oregon Creek	130	114-148	1,989	1,142-2,538

(Source: YCWA 2014a)

The natural hydrograph is referenced as a part of analysis, as it is known to correlate with the distribution of woody riparian vegetation and successful regeneration. Figure 10. illustrates the "recruitment box" concept, which suggests that there is an ideal period during the year that riparian species release seeds in conjunction with flows that distribute the seeds to areas with nursery conditions, including barren substrate and the appropriate moisture regime (Mahoney and Rood 1998).

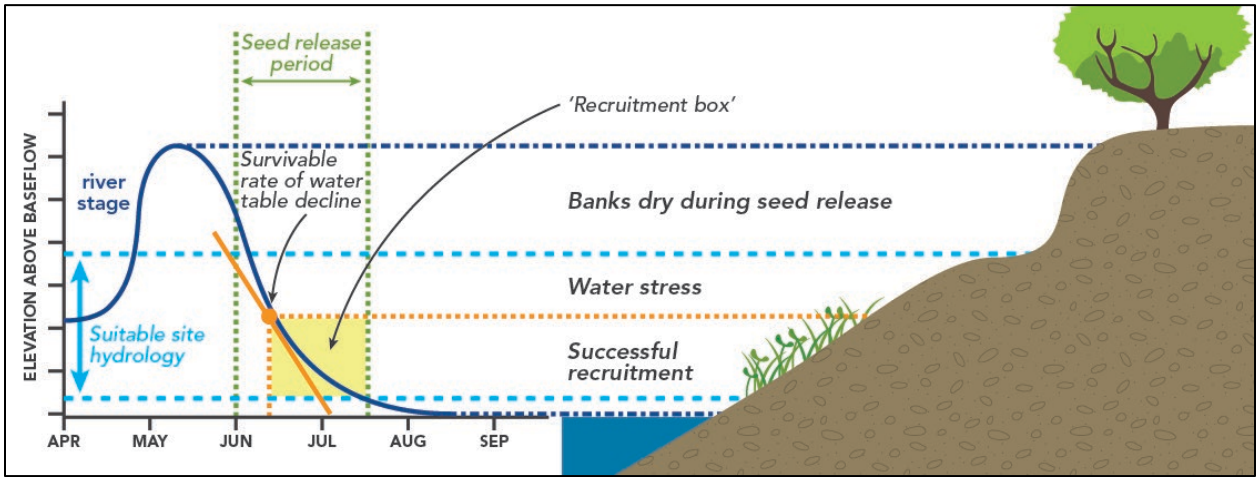

Figure 10.4-1. The "recruitment box" concept illustrates the relationship between the stream stage hydrograph and seed dispersal of woody riparian species for ideal germination conditions (Mahoney and Rood 1998, Stillwater Sciences 2006).

Changes in water temperature, including changes in duration and seasonal rates, can alter growth and reproduction in many riparian species. Large increases in water temperature (i.e., 4°C) could shift species composition and significantly speed up microbial processing, increasing the rate of organic material and nutrient availability in riparian soils. Smaller increases in water temperatures could slightly increase growth rates and stimulate ecosystem production (Naiman et al 2005). However, in the Yuba watershed, the availability of soil and associated access to water[9] is the limiting factor. Current and proposed changes to temperatures are generally slight; in WYTs where

[9] In the streams upstream of Englebright Reservoir, the beds and banks are dominated by bedrock, and in the lower Yuba River, deep cobble banks and floodplains created from historical disturbances lack interstitial fines. In both areas, soils are limited for rooting and for wicking from deeper water tables supported by the streamflow.

temperatures would increase more significantly (i.e., Critical WYTs), flows would also be lower and dewatering would be more likely to influence riparian vegetation. Temperatures have not been considered as a part of the analysis because all temperatures are within ranges unlikely to significantly impact establishment or growth of riparian vegetation as compared to flow releases and the corresponding stages within the riverbed and floodplains.

10.4.3 Impact Indicators and Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for assessing whether a Project would have significant impacts on the environment. In consideration of Project-specific environmental conditions, and based on Appendix G of the CEQA Guidelines, Yuba Water has determined that an impact on non-fisheries biological resources would be considered significant if the Projects would:

- **Impact BIO-1**: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- **Impact BIO-2**: Have a substantial adverse effect on any riparian habitat or other sensitive natural community, including riverine wetlands, identified in local or regional plans, policies, regulations or by the CDFW or USFWS.
- **Impact BIO-4**: Interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.[10]
- **Impact BIO-6:** Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Two typical impact indicators from CEQA Guidelines Appendix G are not analyzed further for non-fisheries biological resources, because neither of these resources are present in the Proposed Project boundary nor the affected reaches. The Proposed Projects, Alternative 1, Alternative 2, and the No Project Alternative would have no impact on them. These include:

- Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal, pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

  Yuba Water's Wetlands Study (Study 6.3) (YCWA 2012a) and Yuba Water's Riparian Habitat Below Englebright Study (YCWA 2014b) conducted during re-licensing did not find non-riverine wetlands in the Proposed YRDP boundary or Proposed Narrows Boundary. Outside of the Proposed YRDP boundary, the NWI modeled wetlands are riverine and occur within the stream channels and floodplains of the affected reaches; these riparian wetlands are analyzed under BIO-3 (riparian habitat). The only non-riverine modeled wetland outside of the Proposed YRDP boundary is a 0.15-acre freshwater pond

[10] All discussion on fisheries and impacts for the Proposed Projects, including migratory fish movement/passage, is included in Section 9 of this EIR.

along Oregon Creek in Celestial Valley, mapped as artificially flooded (i.e. created by landowner). Because this pond is not hydrologically connected to Oregon Creek, changes to operational flows would have no impact. Downstream of Englebright Reservoir, there is one wetland mapped as forested/shrub and emergent wetland. Field verification indicated this is predominantly riparian vegetation with a small area that supports emergent wetlands. This wetland/riparian area is located above the 10,000 cfs modeled river stage, with the ponded area is separated from the lower Yuba River by a dirt berm road and is supported by the man-made pond immediately adjacent on the upstream side of another dirt road and not hydrologically- supported by the river channel.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

  There are no Habitat Conservation Plans or Natural Community Conservation Plans within 5 miles of the Proposed Project boundary or affected reaches (including the lower Yuba River to the confluence with the Feather River).

The analysis evaluates Impacts BIO-1 and BIO-2 relative to the Future Baseline, where appropriate. By contrast, the analysis evaluates Impacts BIO-1 and BIO-6 relative to the Existing Condition only, as differences in flows under any of the comparisons would not meaningfully affect impacts to wildlife movement corridors, and there are no local policies or ordinances for the protection of biological resources that directly affect flows and temperatures. Additionally, analysis of Impact BIO-2 from operations is limited to riparian habitats, as there is limited presence of other sensitive natural communities within the Proposed Project boundary in locations where operations occur or in affected stream reaches.

10.4.3.1 Thresholds of Significance

The Proposed Projects or Alternatives would result in a significant adverse biological impact if any of the following occurred:

- BIO-1: The loss of any individuals or habitat of ESA or CESA-listed species or the loss of occurrences or over a half-acre of habitat of other special-status species, including local or regional plans, policies, or regulations.

- BIO-2: The loss of any riparian habitat or other sensitive natural communities.

- BIO-4: The inability of native resident or migratory wildlife species to use established native resident or migratory wildlife corridors or native wildlife nursery sites.

- BIO-6: A violation of local policies or ordinances protecting biological resources.

10.5 Environmental Impact Analysis

This section describes the potential effects on biological resources which could occur because of the Proposed Projects, No Project Alternative, Alternative 1, and Alternative 2. The Proposed Projects (existing) scenario is analyzed relative to the Existing Condition scenario, and the

Proposed Projects (future) scenario is analyzed relative to the Future Baseline scenario. Alternative 1 and Alternative 2 are also analyzed relative to the Existing Condition and Future Baseline scenarios, but impact determinations for Alternative 1 and Alternative 2 flow-related impacts are discussed only for the Future Baseline comparison, as described in Chapter 4. The section includes an analysis of each alternative's potential to impact sensitive communities and special-status plant and wildlife species using the five significance criteria listed in Section 10.4.3.

10.5.1 Proposed Projects Compared to the Existing Condition

10.5.1.1 Areas Upstream of Englebright Dam

YRDP Impact BIO-PP-1: Construction Impacts on Special-Status Species

Yuba Water proposes numerous construction activities as part of the Proposed YRDP, including the New Colgate Powerhouse new tailwater depression system, modifications to the Our House and Log Cabin Diversion Dams fish release outlets, modification to the Lohman Ridge Tunnel Intake, recreation facility enhancements and new construction under the *Recreation Facilities Plan*, and non-routine maintenance and upgrades to Project access roads under the *Transportation System Management Plan*, that could impact special-status species.

Based on the results of the literature review, past surveys, relicensing studies, and other available data, numerous special-status species are known or have the potential to occur in areas where there is proposed construction within 500 feet of the Proposed YRDP boundary (see Appendix 10E) upstream of Englebright Dam. Information on the species or species groups and their status within the Proposed YRDP are included and based on documented occurrences and/or habitat within the area.

Special-status species are further discussed below in three groups: (1) those species listed or proposed under the federal ESA; (2) those species listed or proposed on the CESA or as a State FP; and (3) all other special-status species, including those listed by the CDFW as SSC, and the Forest Service as FSS.

Table 10.5-1 summarizes which special-status species are known or have the potential to be impacted by each proposed construction activity.

The Proposed YRDP's measures and management plans developed in conjunction with resource agencies, discussed in Section 2.5.1.5 of Chapter 2 and the results of consultation with the USFWS, discussed in Section 2.5.1.10.1 of Chapter 2, contain a mixture of provisions that provide protections to special-status species during construction projects. Some of these protections are specific to certain species, while others cover all or a subset of special-status species that may occur in or near construction work sites. Measures to protect or mitigate special-status species in measures and management plans, as well as from the consultation with the USFWS, include the following:

- GEN3: Provide Environmental Awareness Training to Employees which requires Yuba Water employees who work on the YRDP to take an annual training that reviews special-status species that may be impacted by YRDP activities, including construction, as well as

the known locations of special-status species occurrences. These trainings will help inform employees of how the Proposed YRDP may impact special-status wildlife and how to avoid these impacts.[11]

- LU1: Implement Transportation Management Plan requires that Yuba Water employees and contractors drive only on designated roads (also part of the general Road Use [USFS lands] requirements), which prevents running over sensitive habitats, lessens collisions with special-status species, reduces introduction and spread of invasive species and generally minimizes damage to non-developed areas. Additionally, culverts must be designed not to be barriers for amphibian passage. Construction and maintenance activities on roads must implement limited operating periods (LOP) for special-status wildlife from other plans (detailed below), as well as invasives species preventions provisions.

- RR1: Implement Recreation Facilities Plan requires '…environmental surveys…early in the Site Development process in some instances…' which would assist in identifying special-status wildlife and their habitat prior to the design of the recreation facilities so they may be avoided where possible and impacts minimized, when they cannot be avoided.

- TR1: Implement Integrated Vegetation Management Plan requires the revegetation of temporarily disturbed construction sites, which will prevent the loss of habitat during construction of those areas that are only temporarily disturbed (such as temporary lay down areas).

- TR2: Implement Bald Eagle and American Peregrine Falcon Management Plan requires surveys to identify bald eagle wintering roosts and bald eagle and American peregrine falcon nests. Where nests are identified, a LOP and 0.25-mile buffer for bald eagle nests and 0.5-mile buffer for American peregrine falcon eyries will be established for all YRDP activities, including construction. Any incidentally sited raptor nests are also to be recorded by Yuba Water staff or contractors on the YRDP. The information on other nests will allow Yuba Water to plan construction activities such that they do not impact known raptor nests.

- USFWS protection of CRFL requires the inclusion of '…footbridges over stream crossings and signs to make users aware of the sensitive nature of [CRLF] habitat along the West Shoreline Trail…'

The proposed measures and plans would not be sufficient to completely prevent significant impact to some special-status species during proposed construction activities, so avoidance and mitigation measures were developed for Proposed YRDP construction. Avoidance and mitigation measures identified for each species are described fully in Table 10.6-1. at the end of this chapter.

[11] These annual trainings would not include contractors performing short term work, like a specific construction project.

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Table 10.5-1. Special-status Species with the Potential to be Impacted by Proposed Construction Activities.

Construction Project	Special-status Species																		
	Monarch butterfly	California red-legged frog	Northwestern pond turtle	California spotted owl	Western bumblebee	Foothill yellow-legged frog	Golden eagle	Bald eagle	American peregrine falcon	Great gray owl	Little willow flycatcher	Northern California ringtail	Special-status plants	Coast horned lizard	Special-status raptors	Other special-status and migratory birds	Bats	Sierra marten	American badger
New Colgate Powerhouse New Tailwater Depression System	--	X	--	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Our House and Log Cabin Diversion Dams Fish Release Outlets	--	X	X	X	X	X	--	--	--	X	X	X	X	X	X	X	--	X	--
Modification to Lohman Ridge Tunnel Intake	--	X	X	X	X	X	--	--	--	X	X	X	X	X	X	X	X	X	X
Recreation Kiosk and Signage (Year 1)	X	X	X	X	X	X	X	X	--	X	--	X	X	X	X	X	X	X	X
Frenchy Point Boat-in Campground Decommissioning (Year 1)	X	--	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Dark Day Boat Launch (Year 1, 9)	X	--	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Recreation Bathroom Updates (Year 2)	X	X	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Cottage Creek Campground (Year 2)	X	--	--	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Cottage Creek Picnic Area (Year 2)	X	--	--	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
New Colgate Powerhouse River Access (Year 2)	X	X	X	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Sunset Vista Observation Site (Year 2)	X	--	--	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
West Shoreline Trail (Year 2, 7, 10)	X	X	X	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Water delivery system (Year 3,6)	X	X	X	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Our House Diversion Dam Impoundment Facilities (Year 4)	X	X	X	X	X	X	--	--	--	X	X	X	X	X	X	X	X	X	X
Hornswoggle Group Campground (Year 5)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Shadow Ridge Campground and Trails (Year 5)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Moran Road Boating Site (Year 5)	X	X	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Dark Day Picnic Area (Year 6)	X	--	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Dark Day Campground (Year 6)	X	--	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Dam Overlook Observation Site (Year 7)	X	--	--	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Electricity to Schoolhouse/ Hornswoggle/Kelly Ridge (Year 7)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Kelly Ridge Campground (Year 9)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Dark Day RV Dump Station (Year 9)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Schoolhouse Campground (Year 10)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Water Storage Tanks-Sunset Vista and Cottage Creek Boat Launch (Year 10)	X	--	--	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X

Table 10.5-1. (Continued).

Construction Project	Special-status Species																		
	Monarch butterfly	**California red-legged frog**	**Northwestern pond turtle**	**California spotted owl**	**Western bumblebee**	**Foothill yellow-legged frog**	**Golden eagle**	**Bald eagle**	**American peregrine falcon**	**Great gray owl**	**Little willow flycatcher**	**Northern California ringtail**	**Special-status plants**	**Coast horned lizard**	**Special-status raptors**	**Other special-status and migratory birds**	**Bats**	**Sierra marten**	**American badger**
Garden Point Boat-in Campground (Year 11)	X	--	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Madrone Cove Boat-in Campground (Year 11)	X	--	X	X	X	--	X	X	--	--	--	X	X	X	X	X	X	--	X
Cottage Creek Boat Launch (Year 18)	X	--	X	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Water Treatment Plant (Year 20)	X	--	--	X	X	--	X	X	X	--	--	X	X	X	X	X	X	--	X
Transportation Management Plan	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Federal Threatened and Endangered Species

A total of four species listed, proposed or candidate as threatened or endangered under the federal ESA are known or have the potential to occur in the Proposed YRDP boundary and be impacted by construction activities[12]:

Monarch butterfly (Danaus plexippus), Federal Proposed- Threatened (FPT). Although there are no documented occurrences, the Proposed YRDP boundary contains suitable habitat for monarch butterfly, a FPT under the ESA. Construction activities that may affect monarch butterfly include removal or damage of foraging habitat and/or milkweed (*Asclepias* ssp.) (the only plant on which it can lay eggs and caterpillars can eat) and injury to/disturbance of individuals that may be traveling through or foraging in the area during construction activities.

FERC's FEIS (2019) cited the possibility for "Project-related activities such as…construction of Project facilities, routine Project road and facility maintenance… to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281). FERC also stated that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above (FERC 2019).

The species habitat, including milkweed, may occur within or near the footprint of any of the construction sites. Milkweed is the only species where monarch butterflies lay their eggs and that their caterpillars eat, so its removal during construction could result in the loss of eggs and caterpillars, as well as the habitat itself. Individual adult monarchs may also be crushed or injured by construction equipment, traffic or trampling during implementation of construction activities. Construction of the different proposed facilities and modifications will inevitably result in the loss of some plants that adult monarchs might forage on, but the overall footprint of that loss is minimal compared to the overall acreage of undisturbed ground within and near the Proposed YRDP Boundary. Monarchs may also be temporarily displaced from areas in and around construction by noise, movement of equipment and people, vibrations, dust and other construction disturbances. They would be anticipated to return to places of only temporary disturbance once these activities have ceased.

The combined direct and indirect impacts from construction may be significant to the species, due to loss of milkweed habitat (and associated occurrences of eggs and/or caterpillars), adult individuals and nectar foraging habitat without the implementation of avoidance and mitigation measures. Avoidance and mitigation measures for potential monarch butterfly impacts would include **BIO-1** through **BIO-3, BIO-5** through **BIO-7,** and **BIO-13** through **BIO-14** (see Table 10.6-1.) will be implemented, as described below in CEQA Conclusion, in conjunction with Proposed YRDP measures and plans to reduce direct and non-flow-related indirect impacts from Proposed YRDP construction on monarch butterflies. Therefore, impacts to monarch butterfly would be less than significant with mitigation incorporated.

CRLF (Rana draytonii), Federally Threatened (FT). The Proposed YRDP Boundary contains designated critical habitat (habitat unit YUB-1) for CRLF, an FT species. There are no known

[12] Take of ESA-listed species is illegal without an Incidental Take Permit (ITP). Yuba Water currently does not have an ITP for any ESA-listed species.

occurrences of the species within the Proposed YRDP boundary, but there is an occurrence reported on Little Oregon Creek (east of Oregon Hill Road) from 2003 (CDFW 2025a). Construction activities may affect CRLF through conversion or damage to habitat and/or injury to/disturbance of individuals that may be traveling through, breeding in, or foraging in the area during construction activities.

A variety of construction activities, including the Western Shoreline Trail, which crosses designated critical habitat and includes four stream crossings, as well as tailrace depression system, and the construction of various recreation facilities…" were evaluated as "…unlikely to adversely affect California red-legged frogs because neither the species nor its habitat is known to occur near any of those particular Projects sites (i.e., New Colgate Powerhouse, New Bullards Bar Dam, Our House Diversion Dam, Log Cabin Diversion Dam, Lohman Ridge Diversion Tunnel, and the various recreation areas)…" (page 3-334). Other proposed construction activities, such as repair and culvert replacement on the Moran Cove Boating Site Road, may also damage habitat and/or cause injury to/disturbance of individuals that may be traveling through, breeding or foraging in the area during construction activities.

The USFWS also determined that the Proposed YRDP Project "…may affect, but is not likely to adversely affect…California red-legged frog…[and] not likely to adversely affect the primary constituent elements of critical habitat…" with the implementation of protective measures developed for the species and included in the *Integrated Vegetation Management Plan* (TR1), *Recreation Facilities Plan* (RR1) and *Aquatic Species Management Plan* (AR5) (USFWS 2018a). These protective measures are focused on the area of critical habitat, including Moran Cove and sections of the proposed West Shore Trail.

Individual adult CRLF moving through upland areas between aquatic habitats may be crushed or injured by construction equipment, traffic or trampling during implementation of construction activities. CRLF may also be permanently or temporarily displaced from areas in and around construction by noise, movement of equipment and people, vibrations, dust and other construction disturbances. They would be anticipated to return to areas of only temporary disturbances once these activities have ceased. Construction activities in and around CRLF's aquatic habitat could also introduce non-native species (including chytrid fungus, which can be fatal to amphibians) that can infect the species or indirectly degrade and damage habitat. Habitat may also be lost or damaged during construction activities, if it is required to be filled or otherwise altered by the work.

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on CRLF may be significant to the species, especially since the species has already been extirpated from the majority of its range in California. These avoidance and mitigation measures would include **BIO-1** through **BIO-9,** and **BIO-11** through **BIO-16.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans (as described above), and the ESA-listed species protective measures developed with the USFWS for the Proposed YRDP, would reduce direct and indirect impacts from Proposed YRDP construction. Therefore, impacts on CRLF would be less than significant with mitigation incorporated.

Northwestern pond turtle (Actinemys marmorata), FPT. Per FERC's 2019 FEIS, "…observations of western pond turtles in New Bullards Bar Reservoir at Moran Cove, Garden Point, Tractor Cove (i.e., east of Garden Point), and the mouth of Indian Creek suggest that potentially suitable aquatic habitat and nesting habitat for western pond turtles is abundant in the reservoir…" (page 3-261). Northwestern pond turtles, a FPT under the ESA, were also observed at Log Cabin and Our House diversion dams' impoundments and in the Middle Yuba River and Oregon Creek. Additionally, an occurrence of northwestern pond turtle was observed in 2022 on the Yuba River above Englebright. Generally, all the affected reaches provide suitable habitat for northwestern pond turtle.

Proposed YRDP elements within this corridor have the potential to impact northwestern pond turtle during the construction phase. If northwestern pond turtle is present in areas of construction, there is potential for them to be directly injured by construction equipment. Additionally, northwestern pond turtle is very sensitive to noise disturbance and the presence of loud construction activity different from the baseline noise level has the potential to alter their behavior patterns (Bury and Germano 2008).

FERC's FEIS (2019) identified that "…modifications to the low-level outlets of Log Cabin Diversion Dam would involve construction activities that could affect western pond turtles…" (page 3-283). FERC's FEIS did also determined that Proposed "…Project-related activities such as…construction of [or at] Project facilities, routine Project road and facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281).

Proposed YRDP construction activities in or near northwestern pond turtle's aquatic and upland habitat may remove or degrade areas such that they are no longer useable by the species. Nesting turtles in upland habitat may also be crushed or injured by construction equipment, traffic or trampling during implementation of construction activities, which can also destroy their eggs and/or young.

Northwestern pond turtles may also be temporarily or permanently displaced from areas in and around construction by noise, movement of equipment and people, vibrations, dust, and other construction disturbances. They would be anticipated to return to places of only temporary disturbance once these activities have ceased.

Construction activities in and around turtle habitat could also introduce non-native species that can damage or degrade the habitat. Some non-native species, if introduced, such as giant reed (*Arundo donax)* or Himalayan blackberry, can completely displace all native vegetation and/or consume entire riverbanks such that native species, like northwestern pond turtle, can no longer utilize them as habitat.

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on northwestern pond turtle may be significant to the species, especially since the species has lost much of its aquatic habitat in California. These avoidance and mitigation measures would include **BIO-1** through **BIO-9**, and **BIO-11** through **BIO-16**, As described below in the CEQA Conclusion, implementation of these avoidance and

minimization measures, in conjunction with Proposed YRDP measures and plans (as described above), would reduce direct and indirect impacts from Proposed YRDP construction. Therefore, impacts on northwestern pond turtle would be less than significant with mitigation incorporated.

California spotted owl (Strix occidentalis occidentalis), FC. California spotted owl is known from multiple locations in and around the YRDP boundary. Occurrences and protected activity centers are adjacent to: Our House Diversion Dam and impoundment, Lohman Ridge Diversion Tunnel, Log Cabin Diversion Dam and impoundment, Camptonville Diversion Tunnel, New Bullards Bar Reservoir, New Colgate Powerhouse and Switchyard, Schoolhouse Campground, Hornswoggle Group Campground, Dark Day Boat Launch, Dark Day Campground and Day Use Area, and Schoolhouse Trail. Fifty-four recorded California spotted owl occurrences were within 0.25-mile of New Bullards Bar Reservoir and New Colgate Power Tunnel; four were within a protected activity center, four were within a home range core area, and one was within a spotted owl habitat area approximately 0.25-mile from New Bullards Bar Reservoir. A protected activity center and home range core area is located along the New Colgate Power Tunnel and another protected activity center and home range core area is located at Our House Diversion Dam.

Construction activities throughout the YRDP Boundary may affect California spotted owl through disturbance of nests during the nesting bird season, removal/damage of habitat, and disturbance of individuals that may be traveling through, roosting or foraging in the area during construction activities. FERC's FEIS (2019) stated that "…California spotted owl are forest raptors that are sensitive to disturbance while nesting, and human activity could result in nest abandonment or nest failure…" (page 3-291).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on California spotted owl may be significant to the species, especially since much of its habitat has already been lost in California. These avoidance and mitigation measures would include **BIO-1** through **BIO-3**, **BIO-5** through **BIO-7.** and **BIO-10** through **BIO-13.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans (as discussed above) would reduce direct and indirect impacts of Proposed YRDP construction. Therefore, impacts on California spotted owl would be less than significant with mitigation incorporated.

State Threatened, Endangered and Fully Protected Species

A total of seven species listed or candidate under the state ESA and/or a state FP are known or have the potential to occur in the Proposed YRDP boundary and be impacted by construction activities:

Western bumblebee (Bombus occidentalis), State Candidate- Endangered (SCE). While potential habitat for the Western bumblebee is present within the Proposed YRDP boundary, the nearest occurrence, collected in 1931, was 1.35 miles north of New Bullards Bar (CDFW 2025a). They utilize abandoned rodent burrows for nesting, though they occasionally use hollowed out logs.

Per the FEIS, "Project construction activities could affect wildlife…," such as Western bumblebee "…directly through mortality, injury, disturbance, or displacement resulting from habitat

destruction, alteration, or fragmentation" (page 3-281). In addressing these potential impacts to Western bumblebee, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above, (FERC 2019).

Proposed construction activities may collapse rodent burrows and remove logs used by Western bumblebees for nesting, potentially, killing or injuring nesting bees, along with destroying the nesting habitat. Some areas of foraging habitat will also be removed for the construction of recreation facilities and upgrade of roads. Other foraging areas may be damaged or degraded due to dust, the introduction of invasive species or operation of construction equipment, project vehicles or construction personnel. Additionally, individuals might be trampled or hit by equipment, vehicles or construction personnel during work, killing or injuring them.

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on western bumblebees may be significant to the species, especially since not much is known of its status in California. These avoidance and mitigation measures would include **BIO-1** through **BIO-3**, **BIO-5** through **BIO-7.** and **BIO-10** through **BIO-13.** As described below in the CEQA Conclusion, implementation of avoidance and mitigation measures **BIO-1** through **BIO-7**, **BIO-12** through **BIO-13**, and **BIO-15** in conjunction with Proposed YRDP measures and plans, as described above, would reduce impacts of Proposed YRDP construction. Therefore, impacts on Western bumblebee would be less than significant with mitigation incorporated.

FYLF (Rana boylii), State Threatened (ST). FYLF is known to occur within the YRDP boundary at Log Cabin and Our House Diversion Dam impoundments, and on the affected reaches of Oregon Creek and the Middle Yuba River, upstream and downstream of the impoundments. At both Project facilities, thousands of individuals were documented during sediment management activities under the existing *Sediment Management Plan*.

Construction activities that may utilize equipment in or near areas utilized by FYLF, include the modifications to the Lohman Ridge Tunnel and the fish release outlets, the building of a "beach access route" downstream of the diversion dam and weir at Our House, and maintenance and upgrade of roads in the areas of the Log Cabin and Our House diversion dams. Construction activities at or near these areas may affect FYLF through conversion or damage to habitat and/or injury to/disturbance of individuals that may be traveling through, breeding in, or foraging in the area during construction activities. FERC's FEIS (2019) described how, "Project activities… [requiring] heavy equipment for work in the bed, banks, stream channels, impoundments, and adjacent wetland and riparian areas may have the potential to affect all life stages of foothill yellow-legged frog…" (page 3-300). Additionally, this FYLF may be permanently or temporarily displaced from areas in and around construction by noise, movement of equipment and people, vibrations, dust and other construction disturbances. They would be anticipated to return to areas of only temporary disturbances once these activities have ceased. Construction activities in and around FYLF's aquatic habitat could also introduce non-native species (including chytrid fungus, which can be fatal to amphibians) that can infect the species or indirectly degrade and damage habitat. Habitat may also be lost or damaged during construction activities, if it is required to be filled or otherwise altered by the work.

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on FYLF may be significant to the species, especially since the species has lost much of its habitat throughout California. These avoidance and mitigation measures would include **BIO-1** through **BIO-9,** and **BIO-11** through **BIO-16.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on FYLF would be less than significant with mitigation incorporated.

Golden eagle (Aquila chrysaetos), Bald and Golden Eagle Protection Act (BGEPA), Fully Protected (FP). Golden eagle is known to occur at New Bullards Bar Reservoir, at which three individuals have been observed. Per the FERC's FEIS (2019), "…none of these occurrences include nesting birds or evidence of nesting activities. This suggests golden eagles are nonresident visitors to the Project…" (page 3-292). Removal/damage of habitat and disturbance of individuals that may be traveling through, roosting or foraging in the area during construction activities may affect golden eagles.

Since golden eagles are merely nonresident (and non-nesting) visitors to the Proposed YRDP, potential impacts to the species would be confined to the removal/damage of a small amount of foraging/roosting habitat and the occasional individual avoidance of or flushing from a construction area during work. Therefore, the impacts of Proposed YRDP construction on golden eagle would be less than significant.

Bald eagle (Haliaeetus leucocephalus), BGEPA, State Endangered (SE), FP. Bald eagle is known to occur within the YRDP boundary at New Bullards Bar Reservoir and downstream of New Colgate Powerhouse. Over both locations, 28 occurrences, including three night roosts and 11 hunting perches, were observed, across three wintering surveys (2011–2012). Two nests were located on New Bullards Bar Reservoir in 2011 and 2012 during bald eagle nest surveys for the relicensing study. They have also been sighted multiple times on New Bullards Bar over the last ten years, most recently in April 2025 (Cornell Lab of Ornithology 2025).

Construction activities that may affect bald eagles include disturbance of nests during the nesting bird season, removal/damage of habitat, and disturbance of individuals that may be traveling through, roosting or foraging in the area during construction activities. The FERC's FEIS (2019) mentions that because "…bald eagles can be sensitive to increased noise during the nesting period," when constructing facilities, "disturbance could result in nest abandonment or reduced nesting success" (page 3-290). The FEIS also identified that "…construction of the proposed West Shoreline Trail…could affect a bald eagle nest near Milk Ranch" (page 3-291).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on bald eagles may be significant, as they may lose nests or habitat to the work. These avoidance and mitigation measures would include **BIO-1** through **BIO-3**, **BIO-5** through **BIO-7.** and **BIO-10** through **BIO-13.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and indirect impacts from Proposed YRDP construction. Therefore, impacts on bald eagle would be less than significant with mitigation incorporated.

Great gray owl (Strix nebulosa), SE. There is one known occurrence of great gray owl from 2010, approximately 0.4-mile south of the Lohman Ridge Diversion Tunnel outside of the YRDP boundary. Additionally, "…a pair of great gray owls have an established nesting territory within 1 mile of the Log Cabin Diversion Dam impoundment and associated access road…" per the FERC's 2019 FEIS (page 3-263). Removal/damage of foraging and roosting habitat and disturbance of individuals that may be traveling through, roosting, or foraging in the area during construction activities may affect great gray owls. Owls flying through areas of construction traffic may also collide with larger vehicles. Only one occurrence of great gray owls is known to occur in the area of the Log Cabin and Our House diversion dams, so only Proposed YRDP activities in or near those facilities have the potential to impact great gray owl. These impacts would be of limited duration and severity, except for the possibility of vehicle collision with construction traffic. Additionally, as described in the CEQA Conclusion, avoidance and mitigation measures **BIO-1** through **BIO-3**, **BIO-5, BIO-7**, and **BIO-13** in conjunction with Proposed YRDP measures and plans, as described above, would further reduce impacts of Proposed YRDP construction. Therefore, impacts on great gray owl would be less than significant with mitigation incorporated.

Little willow flycatcher (Empidonax traillii brewsteri), SE. Little willow flycatcher was observed at a Yuba Water willow revegetation site, along Oregon Creek, a few miles downstream of Log Cabin Diversion Dam during sediment management activities in 2021. This observation is the only known location of little willow flycatcher near the Proposed YRDP, and there are limited areas of suitable riparian habitat in areas of proposed construction. Construction and related activities are known to "…create noise near active nests and winter roosting sites…" and "…result in the removal of nest or roost trees," which may impact little willow flycatcher (page 3-289). Construction activities that may affect little willow flycatcher include disturbance of nests during the nesting bird season, removal/damage of foraging, roosting and/or nesting habitat, and disturbance of individuals that may be traveling through, roosting or foraging in the area during construction activities.

Due to the lack of occurrences and suitable riparian habitat in the area of Proposed YRDP construction activities, impacts on little willow flycatcher will be less than significant.

Ringtail (Bassariscus astutus raptor), FP. Ringtail have been observed at New Colgate Powerhouse and Switchyard during pre-licensing studies and at Our House Diversion Dam during 2012 bat surveys. They are likely residents of the majority of the Proposed YRDP boundary. Ringtails are not expected to be directly impacted by construction and the FERC's FEIS (2019) directly states that their "…habitats would not be physically altered during construction" (page 3-285). Despite this, ringtails are known to be attracted to human activity, especially when sources of food are accessible. This greatly increases the chances of direct interactions with humans and the potential for impacts to ringtail within the Proposed YRDP. This would include potential collisions with construction traffic and ingesting construction garbage, which can cause sickness or death. In addressing these potential impacts to ringtail, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures, as described above, would protect sensitive species…" (page 3-283).

Ringtails are listed as FP and take of the species is prohibited except when authorized in specific circumstances, rendering any impact to ringtails that may be considered take as potentially significant. As described below in the CEQA Conclusion, implementation of avoidance and

mitigation measures **BIO-1** through **BIO-3**, **BIO-5, BIO-7**, and **BIO-12** through **BIO-14** in conjunction with Proposed YRDP measures and plans, as described above, would limit chances of take and reduce impacts of Proposed YRDP construction. Therefore, impacts on ringtail would less than significant with mitigation incorporated.

Other Special-status Species

Additional special-status species which are not federal or state listed are known or have the potential to occur in the Proposed Projects Boundary and be impacted by construction activities, including:

Special-status plants. Multiple special-status plants are known to occur across the YRDP at multiple facility locations. Twenty-one species have been identified with the potential to occur within the YRDP Boundary, and six species occur throughout the YRDP boundary. Construction activities have the potential to impact special status plants through compaction, trampling, and removal and degradation of habitat, including through the introduction of non-native invasive plants. Per the FERC's FEIS (2019), construction activities such as "modifications to the low-level outlets of the Log Cabin Diversion Dam…could affect the Humboldt lily…" (page 3-269) and the"…construction of Project recreation facilities or the rehabilitation and enhancements of existing recreation facilities would include the use of heavy equipment that causes ground disturbance and habitat alteration, which could affect known populations of special-status plants. YCWA has committed to perform surveys for botanical resources, including special-status plants, prior to construction of the proposed recreation facilities at Kelly Ridge…with implementation of… measures, YCWA would minimize potential effects on special-status plants…" (page 3-269 to 3-271).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on special-status plants may be significant, since multiple occurrences could be removed or damaged, with additional habitat lost due to the introduction of non-native plant species and/or disturbance by construction activities, such as equipment going off road and into undisturbed areas. These avoidance and mitigation measures would include **BIO-1** through **BIO-8, BIO-11, BIO-12, BIO-15** and **BIO-16.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on special-status plants would less than significant with mitigation incorporated.

Coast horned lizard (Phrynosoma blainvillii), SSC. While potential habitat for the coast horned lizard is present within the Proposed YRDP Boundary, there are no known occurrences within 5 miles of the YRDP. Per FERC's FEIS (2019), "Project construction activities could affect wildlife…", such as coast horned lizard, "…directly through mortality, injury, disturbance, or displacement resulting from habitat destruction, alteration, or fragmentation" (page 3-281). In addressing these potential impacts to coast horned lizard, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above.

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on coast horned lizard may be significant, including destruction or damage of burrows (which may also lead to death or injury of lizards), being run over by construction traffic, damage or destruction of habitat outside of construction areas, etc. These avoidance and mitigation measures would include **BIO-1** through **BIO-3, BIO-5** through **BIO-7,** and **BIO-12** through **BIO-14.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on coast horned lizard would be less than significant with mitigation incorporated.

Special-status raptors. Special status raptors, such as American peregrine falcon, American goshawk, northern harrier (*Circus cyaneus*), and long-eared owl (*Asio otus*), have potential habitat throughout the Proposed YRDP. American peregrine falcon is known to occur at New Bullards Bar and has been observed numerous times throughout relicensing and after, including a suspected nesting pair below the dam. American goshawk has known occurrences, nests, and a Protected Activity Center on New Bullard Bar Reservoir.

Impacts to American peregrine falcon due to construction are discussed in the FEIS (FERC 2019), primarily that "construction of the proposed auxiliary flood control outlet at New Bullards Bar Dam would involve ground disturbance and habitat alteration that could affect…American peregrine falcon in proximity to the construction area" (page 3-283). Other construction activities in this area, including recreation facility construction and upgrades, have the potential to impact the species in the same way.

While construction impacts are not specifically identified, according to the FEIS (FERC 2019), northern goshawk are "…sensitive to disturbance while nesting, and human activity could result in nest abandonment or nest failure" (page 3-291). Raptors may also be affected by construction activities through more direct impacts such as mortality or injury, during vegetation management and construction traffic, as well as habitat loss and fragmentation. In addressing these potential impacts to special-status raptors, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above (FERC 2019).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on special-status raptors may be significant, including abandonment of nests due to habitat destruction, disturbance from noise, vibrations or other construction activities, damage or destruction of habitat, collisions with construction traffic, as well as more temporary disturbances from construction activities. These avoidance and mitigation measures would include **BIO-1** through **BIO-3**, and **BIO-5** through **BIO-13.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on special-status raptors would be less than significant with mitigation incorporated.

Other special-status and migratory birds.[13] Other special-status and migratory birds have potential habitat throughout the YRDP boundary. Species, such as olive-sided flycatcher (*Contopus cooperi*), yellow-breasted chat (*Icteria virens*), and yellow warbler (*Setophaga petechia*), have been observed along Oregon Creek a few miles downstream of Log Cabin Diversion Dam during both willow revegetation and sediment management activities in 2021. These activities are known to disturb both foraging and roosting sites for migratory birds. Activities which create noise, remove or alter habitat, and "…require extended human presence or involv[e] heavy equipment or loud mechanized equipment…" have the potential to disturb special-status and migratory birds (page 3-289). In addressing these potential impacts to other special-status and migratory birds, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above (FERC 2019).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on other special-status and migratory birds may be significant, including abandonment of nests due to habitat destruction, disturbance from noise, vibrations or other construction activities, damage or destruction of habitat, collisions with construction traffic, as well as more temporary disturbances from construction activities. These avoidance and mitigation measures would include **BIO-1** through **BIO-3**, and **BIO-5** through **BIO-13.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on other special-status and migratory birds would be less than significant with mitigation incorporated.

Special-status bats. There are seven species of special-status bats known to occur within the YRDP boundary. Acoustic detection studies were conducted in 2012 at a variety of locations within the YRDP. Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and spotted bat (*Euderma maculatum*) were identified at Camptonville Tunnel below New Bullards Bar Dam, and at the New Colgate Powerhouse. Western red bat (*Lasiurus blossevillii*) was identified at Camptonville Tunnel, the New Colgate Powerhouse, and Our House Diversion Dam, Log Cabin Diversion Dam, Dark Day Campground and Boat Launch, and Slate Creek. Fringed myotis (*Myotis thysanodes*) was located at Our House Diversion Dam only. Western mastiff bat (*Eumops perotis*) has been acoustically detected, in 2022, approximately 1 mile from the Yuba River at the divergence into the South Yuba River (NABat 2024).

The FEIS mentioned that "…bats are sensitive to anthropogenic impacts, both as a direct result of human presence and indirect effects from disturbances to their roosts and surrounding habitat…" (page 3-286) (FERC 2019). Potential impacts from construction activities include decreased roost habitat, young abandonment, decreases fecundity of successive generations, and early awakening from hibernation and subsequent decreased winter survival rate.

As discussed above, without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on special-status bats may be significant. These avoidance and mitigation measures would include **BIO-1, BIO-5, BIO-7, BIO-**

[13] This section covers bird species listed as Bird Species of Conservation Concern and discussed in the 2019 FEIS but not included specifically in this section's analysis.

12 through **BIO-13**, and **BIO-17.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on special-status bats would be less than significant with mitigation incorporated.

Sierra marten (Martes caurina sierrae), FSS-Plumas, FSS-Tahoe. The closest known occurrence of Sierra marten is from 2012, located approximately 2 miles northeast of the Campton Diversion tunnel, outside of the YRDP boundary. This observation is the only known location of Sierra marten within the YRDP vicinity, and the species inhabits mostly old growth forest. Per the FEIS, "Project construction activities could affect wildlife…," such as Sierra marten "…directly through mortality, injury, disturbance, or displacement resulting from habitat destruction, alteration, or fragmentation" (page 3-281). In addressing these potential impacts to Sierra marten, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above (FERC 2019).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on Sierra marten may be significant, including destruction or damage of habitat, collisions with construction traffic, permanent abandonment of an area due to construction disturbances, etc. These avoidance and mitigation measures would include **BIO-1** through **BIO-3,** and **BIO-11** through **BIO-14.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, as described above, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on Sierra marten would be less than significant with mitigation incorporated.

American badger (Taxidea taxus), SSC. While potential habitat for the American badger is present within the YRDP boundary, there are no known occurrences of within 5 miles of the YRDP boundary. Per the FEIS, "Project construction activities could affect wildlife…," such as American badger "…directly through mortality, injury, disturbance, or displacement resulting from habitat destruction, alteration, or fragmentation" (page 3-281). In addressing these potential impacts to American badger, the FEIS states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283), as described above (FERC 2019).

Without implementation of avoidance and mitigation measures, the combined direct and non-flow-related indirect impacts from construction on American badger may be significant, including destruction or damage of habitat, collisions with construction traffic, permanent abandonment of an area due to construction disturbances, etc. These avoidance and mitigation measures would include **BIO-1** through **BIO-3,** and **BIO-11** through **BIO-14.** As described below in the CEQA Conclusion, implementation of these avoidance and minimization measures in conjunction with Proposed YRDP measures and plans, would reduce direct and non-flow-related indirect impacts from Proposed YRDP construction. Therefore, impacts on American badger would be less than significant with mitigation incorporated.

CEQA Conclusion

Although the Proposed YRDP's measures and management plans include some provisions for protecting special-status species during construction activities, they are not comprehensive. Construction for the Proposed YRDP could significantly impact special-status species through combined direct and indirect impacts, including by direct death or injury to individuals, habitat loss or degradation (including through introduction of invasive species), permanent or temporary disturbance caused by construction activities (e.g.- noise, dust, vibrations), as disclosed above. Avoidance and mitigation measures BIO-1 through BIO-16, which are fully described in Section 10.7, will offer additional protection during construction activities and reduce potential significant impacts for the following reasons:

- **BIO-1: Project Footprint** constrains work to the minimum required to get the work done and directs as much as possible to occur in previously disturbed locations, as well as flagging the bounds of work to keep construction activities from wandering outside the boundaries. This will minimize loss of habitat and individuals of the species. All fences/flagging will be placed before and maintained for the duration of a construction project, and no impacts occurring beyond the fencing/flagging constitutes success of this measure.
- **BIO-2: Garbage and Trash** keeps work areas free of garbage, including microtrash, which can damage habitat, especially if it spreads outside of the work footprints to surrounding areas. Some species may also eat garbage, which can make them sick or even kill them. Alternatively, species feeding on garbage may become dependent on or too socialized to humans, which can make them pests and/or unable to exist in the wild. All garbage being cleaned daily before workers leave the work site, and no garbage being left behind at the end of construction constitutes success of the measure.
- **BIO-3: Vehicular Best Management Practices** will keep vehicles on established roads and other areas for driving and fueling/maintenance, as well as restrain the speed of the vehicles. This will limit destruction of habitat from crushing and fuel spills, as well as collisions that can cause injury or death of species on or near roads and other construction areas. Success of this measure will include no collisions between wildlife and construction equipment/vehicles, all vehicles and equipment staying on roads and within the work area limits and all refueling or maintenance taking place in designated areas (barring breakdowns).
- **BIO-4: Clean Fill** will minimize the use of imported fill, and if needed, imported fill will be from clean sites and weed-free. This will limit secondary impacts to work areas and the species that inhabit them by preventing the introduction of non-native species and/or contaminated fill which would degrade sites. Success of this measure will be the use of local fill only or the confirmation that any imported fill is clean prior to use.
- **BIO-5: Worker Environmental Awareness Program (WEAP)** will provide all workers on projects with information on the special-status species that may be on or near the work area and the requirements for their protection. This training assists in the implementation of required protective measures, such that they are effective in protecting species and habitat, as required by the CEQA document (as well as license measures, management

plans and other permits). An onsite record of all workers taking the program constitutes success of the measure.

- **BIO-6: Flagging Sensitive Resources** would mark for avoidance any sensitive resources that need to be retained in or near work areas to keep equipment and workers out of known occurrences of special-status species (such as special-status plants), sensitive habitats (such as milkweed occurrences) or other sensitive areas (such as wetlands or riparian vegetation) during project activities. This will prevent direct harm to species, such as death or injury, and indirect, such as damage to habitat or introduction of non-native species. All fences/flagging being placed around sensitive resources before and maintained for the duration of a construction project, and no impacts occurring beyond the fencing/flagging constitutes success of this measure.
- **BIO-7: Minimization of Vegetation Removal** would limit any removal or disturbance of vegetation to the minimum necessary, preventing destruction or damage to special-status species habitat by project activities. Additionally, oaks with a diameter at breast height (DBH) of 6 inches of greater and native trees with a DBH of 30 inches or greater will be avoided, as well as other sensitive habitats. This would include flagging/fencing of riparian habitat, other sensitive habitats, and larger oaks and native trees. All fences/flagging placed around riparian and other sensitive habitat and larger native trees before and maintained for the duration of a construction project, and no impacts beyond the fence/flag would success of this measure.
- **BIO-8: Special-Status Semi-Aquatic Species Protection** requires clearance surveys of appropriate habitats for semi-aquatic species. Species will be allowed to leave the area of their own volition, per **BIO-13**. These sweeps prevent direct harm to species via trampling, crushing or other injury, as well as limiting non-flow-related indirect harm by pausing work until species clear the work area so they are not flushed or disturbed by activities (such as noise or dust). No construction-related injury or death of special-status semi-aquatic species will be the measurement of success of this measure.
- **BIO-9: Avoid Work in Flowing Water** would prevent equipment, except pumps, from being used in flowing water. This protects fouling of both work areas and downstream habitats by sediment or other materials that would be stirred up by equipment. Sensitive aquatic and semi-aquatic species may be harmed or their habitat damaged by sediment or other plumes of material, as well as leakage or sloughing of materials off equipment in flowing water. Success of this measure will be determined by no heavy equipment being used in flowing water for the duration of construction activities.
- **BIO-10: Migratory Bird and Raptor Surveys** requires any clearing and/or construction activities taking place between February 1 and August 31 have nesting bird surveys occur no more than a week prior to start. If active nests are located a protective buffer will be established for the duration of the work or until the nest is inactive. Construction activities can directly remove or destroy nests but may also cause nest abandonment or lower chick success due to disturbance. Success of this measure will be detection of nests prior to construction activities and maintenance of buffers throughout the required period of the construction activities or the verified inactivity of the nest(s), whichever comes first.

- **BIO-11: No Net Loss of Sensitive Habitat** mandates that any permanent loss of sensitive communities, as identified in this document, would be mitigated for at a 1:1 ratio. This prevents permanent destruction of already rare habitat, such as wetlands and riparian communities, which often serves as the habitat for special-status plants and wildlife, as well. A demonstrable 1:1 ratio of lost habitat to mitigated habitat will measure the success of the mitigation.
- **BIO-12: Pre-construction Surveys** will identify occurrences of special-status species or their habitats in areas that have not been surveyed recently, such that impacts to species and habitat may be more accurately determined and required avoidance and mitigation measures properly employed prior to and during activities. Success will be measured by survey performance prior to construction, located and flagged/fenced sensitive resources, and included any new sensitive resources in the WEAP.
- **BIO-13: Special-status Wildlife Species** If special-status wildlife enters a work area, they will be allowed to move out on their own and work will be paused in the area of the species, which will protect the species from death or injury from workers and equipment and other impacts of the work, such as noise, dust or vibrations. Success will be measured by lack of injury or death of wildlife in the work area due to construction activities.
- **BIO-14: Excavations** requires that unattended excavations are covered, surrounded by exclusionary fencing, or have an escape ramp such that wildlife does not get trapped in an excavation. Excavations would also be checked prior to the start of excavations. These actions prevent small wildlife from being killed or injured during excavation activities. Success will be measured by no wildlife being found trapped in excavations.
- **BIO-15: Avoidance of Aquatic Habitat** requires that all impacts to delineated aquatic resources would be limited to the amount necessary for completion of work activities. This prevents death or injury of species within these areas, as well as destruction or damage to their aquatic habitat, which is also a sensitive resource. All fences/flagging being placed around aquatic habitat before and maintained for the duration of a construction project, and no impacts occurring beyond the fencing/flagging constitutes success of this measure.
- **BIO-16: Bat Protections** requires that Project facilities will be surveyed for bats (if they have not been already) and humane exclusionary devices put in place between November 1 and February 28. Success will be measured by surveys confirming that all bats have been excluded from a facility prior to any construction occurs.

With the incorporation of avoidance and mitigation measures **MM-BIO-1** through **MM-BIO-16**, construction impacts to special-status species would be **less than significant with mitigation incorporated**.

YRDP Impact BIO-PP-2: Operations Impacts on Special-Status Species

The Proposed YRDP's O&M activities have the potential to impact special-status species. Chapter 2, Project Description, describes Proposed YRDP, including flow modifications, implementation of new license measures and management plans, and O&M of both current, modified, and new YRDP facilities.

As described in Section 2.5.1.3 of Chapter 2, there are 12 conditions which would modify flows for the Proposed YRDP's affected reaches downstream of the dams at Log Cabin, Our House and New Bullards Bar. The specifics of flow changes are detailed in Appendix 4B.

The Proposed YRDP's measures and management plans developed in conjunction with resource agencies, discussed in Section 2.5.1.5 of Chapter 2 and the results of consultation with the USFWS, discussed in Section 2.5.1.10.1 of Chapter 2, contain a mixture of provisions that provide protection to special-status species during Proposed YRDP O&M. Some of these protections are specific to certain species, while others cover all or a subset of special-status species that may occur in or near construction work sites. Measures to protect or mitigate special-status species in measures and management plans, as well as from the consultation with the USFWS, include the following:

- GEN3: Provide Environmental Awareness Training to Employees as described above.
- AR5: Implement Aquatic Invasive Species Management Plan requires efforts to prevent the introduction and spread of a variety of aquatic invasive species into the Proposed YRDP, so they do not degrade habitat and crowd at native species. Additionally, American bullfrogs (*Lithobates catesbeianus*) in the area of Moran Cove will be targeted for removal to protect occurrences of CRLF from predation and competition.
- AR7: Implement Upper Yuba River Aquatic Management Plan requires Yuba Water to monitor FYLF, northwestern pond turtle, riparian vegetation and LWM on the North Yuba River, Middle Yuba River, mainstem Yuba River and Oregon Creek) over the course of the license.
- GS3: Implement Our House and Log Cabin Diversions Dams and New Bullards Bar Reservoir Woody Material Management Plan requires the protection of specific special-status species during the annual collection, storage and disposal of wood material on New Bullards Bar. These include bald eagle LOPs and buffers for winter roosts and nests for wood gathering and burning activities, a LOP and buffer for nesting birds, CRLF will be protected by prevention of woody management activities within 300 feet of critical habitat and occupied habitat, and protection of nesting habitat for northwestern pond turtles, if identified.
- LU1: Implement Transportation Management Plan as described above.
- TR1: Implement Integrated Vegetation Management Plan requires that Yuba Water employees or contractors performing YRDP-related activities follow California Invasive Plant Council best management policies (BMP) for the prevention of introduction and spread of invasive plant species, which can outcompete native plants and otherwise degrade habitat (including through increase in fire probability and intensity). The Plan also stipulates the revegetation of temporarily disturbed areas, including areas of invasive species removal, sites subject to Project O&M and areas that have become unvegetated due to recreation. Revegetation prevents the loss of and/or improves existing habitat for special-status species. Additionally, the Plan requires surveys for special-status plants every 10 years, consultation with agencies for vegetation activities in special-status plant occurrences, and monitoring of special-status plants co-occurring with invasive plants. For special-status raptors, the Plan adds an LOP and buffer for nesting American goshawk,

California spotted owls, and great gray owls, as well as similar protections for other nesting birds. CRLF and FYLF are protected via consultation requirements prior to any vegetation management within 300 feet of breeding sites and restrictions on pesticide use. Finally, if any northwestern pond turtle nesting sites are identified, coordination with agencies will be required to develop protection measures.

- TR2: Implement Bald Eagle and American Peregrine Falcon Management Plan as described above.
- TR3: Implement Ringtail Management Plan requires installation of exclusionary devices at YRDP facilities to prevent access to the facilities by ringtails. This will prevention ringtail electrocution at powerhouses, interactions with humans and vehicles, and dependence on humans by the species.
- TR4: Implement Bat Management Plan requires surveys of YRDP facilities for roosting bats, as well as access points for bats, and the placement of exclusionary devices at facilities. This will limit human-bat interactions and possible injury and/or death of bats in YRDP activities within or on the facilities.
- USFWS protection of CRFL requires that Yuba Water implement all CRLF provisions discussed above.

As explained in *YRDP Impact BIO-PP-1*, numerous special-status species are known or have the potential to occur within areas that may be impacted by the Proposed YRDP (see Appendix 10E). The species or species groups identified below were determined to have the potential to be impacted by Proposed YRDP operations upstream of Englebright Dam. The species below were included to complete a comprehensive assessment of potentially occurring species; however, their inclusion does not necessarily constitute presence.

Federal Threatened and Endangered Species

Monarch butterfly, FPT. The YRDP boundary contains suitable habitat for monarch butterfly, a FPT. O&M activities that may affect monarch butterfly include removal of foraging habitat or milkweed (*Asclepias* ssp.) (the only plant on which it can lay eggs) and injury to/disturbance of individuals that may be traveling through or foraging in the area during vegetation management, maintenance of Project facilities (including recreation areas and roads) and recreation area use, among others. FERC's FEIS (2019) stated that "Project-related activities such as… routine Project road and facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281). Flow changes are not anticipated to impact this species, since their habitat is not linked to the reservoirs or affected reaches. The FEIS (FERC 2019) also determined that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283). In particular, the Integrated Vegetation Management Plan's requirements for BMPs to prevent the introduction of invasive plants, revegetation, and surveys for special-status plants (which will include milkweed) will prevent loss of monarch butterfly foraging and egg-laying habitat during Proposed YRDP O&M. Yuba Water employees will also be familiar with the species and milkweed, due to the annual training (GEN3), so they will know to avoid milkweed occurrences when possible. The requirement to drive on existing roads only (LU1) will also

prevent damage to foraging habitat and milkweed by Yuba Water and their contractors' vehicles and equipment.

Unlike construction activities, the Proposed YRDP's O&M, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including monarch butterfly, during Proposed YRDP activities. Therefore, Proposed YRDP operations on monarch butterfly would be less than significant.

California red-legged frog, FT. FERC's FEIS (2019) analyzed the impact of a variety of YRDP operations on CRLF and its critical habitat, including "… management of water levels in New Bullards Bar Reservoir, vegetation management and other ground-disturbing activities, the application of pesticides, recreation, and LWM management…" (page 3-331). As described above, the Proposed YRDP include provisions in multiple plans (*Integrated Vegetation Management Plan*, *Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan*, *Aquatic Invasive Species Management Plan*, *Recreation Facilities Plan*, *Hazardous Materials Management Plan*, and *Transportation Systems Plan*), in addition to various measures, that would be protective to the CRLF. FERC's FEIS (2019) stated that "…proposed issuance of a new license may affect, but is not likely to adversely affect, California red-legged frog or designated critical habitat…" (page 3-338).

The USFWS also determined that the Proposed YRDP "…may affect, but is not likely to adversely affect…California red-legged frog…[and] not likely to adversely affect the primary constituent elements of critical habitat…" with the implementation of protective measures developed for the species and included in the *Integrated Vegetation Management Plan* (TR1), Recreation Facilities Plan (RR1) and *Aquatic Species Management Plan* (AR5) (USFWS 2018a). These protective measures are focused on the area of critical habitat, including Moran Cove and sections of the proposed West Shore Trail.

Individual adult CRLF moving through upland areas between aquatic habitats may be crushed or injured by equipment, traffic or trampling during implementation of O&M activities. CRLF may also be permanently or temporarily displaced from areas in and around O&M activities by noise, movement of equipment and people, vibrations, dust and other disturbances. They would be anticipated to return to areas of only temporary disturbances once these activities have ceased. O&M activities in and around CRLF's aquatic habitat could also introduce non-native species (including chytrid fungus, which can be fatal to amphibians) that can infect the species or indirectly degrade and damage habitat. Habitat may also be lost or damaged during Project O&M.

Proposed changes to YRDP flows are not anticipated to impact CRLF, since they are not known or anticipated to be present in any area outside of the aquatic features near Moran Cove. These areas are not projected to be affected by the flow changes.

The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including CRLF, during Proposed YRDP activities. Therefore, Proposed YRDP operations impacts on CRLF would be less than significant.

Northwestern pond turtle, FPT. Proposed YRDP operations may impact northwestern pond turtles through changes in flows, and ongoing O&M activities.

Proposed YRDP vegetation management facility maintenance or recreation activities in or near northwestern pond turtle's aquatic and upland habitat may degrade areas such that they are no longer useable by the species. Nesting turtles in upland habitat may also be crushed or injured by equipment, traffic or trampling, which can also destroy their eggs and/or young.

Proposed operations activities in and around turtle habitat could also introduce non-native species that can damage or degrade the habitat. Some non-native species, if introduced, such as giant reed (*Arundo donax)* or Himalayan blackberry, can completely displace all native vegetation and/or consume entire riverbanks such that native species, like northwestern pond turtle, can no longer utilize them as habitat.

However, the proposed YRDP includes measures and plans that will prevent or limit potential impacts to northwestern pond turtles. Yuba Water employees will also be familiar with the species and its habitat, due to the annual training (GEN3). The requirement to drive on existing roads only (LU1) will also prevent damage to nesting habitat by Yuba Water and their contractors' vehicles and equipment. The Integrated Vegetation Management Plan requires that if any northwestern pond turtle nesting sites are identified, coordination with agencies will be required to develop protection measures. Additionally, Yuba Water will monitor northwestern pond turtles in the upper Yuba River under the Proposed Upper Yuba River Monitoring Plan (AR7), which will provide the opportunity to consult with agencies about additional protective measures should there be a noticeable decline in the northwestern pond turtle.

Studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures. However, they can survive in waters as with temperatures as low as 34ºF to as high as 104ºF. In California, they are adapted to higher flows in the winter, when they leave the water and overwinter in the uplands. The more upland areas are also where they nest, though their nests are still subject to washout in extreme flood events. However, flood events can also improve nesting habitat. Additionally, northwestern pond turtles are also adapted to periodic droughts, which have been relatively frequent in California since 1900 (Bondi and Marks 2013, Reese and Welsh Jr. 1998, Ashton et al. 2015, USFWS 2023).

Northwestern pond turtles in regulated waters (with dams) with colder water temperatures tend to be smaller and less successful reproductively than those in free-flowing waters. They also tend to leave regulated waters earlier to overwinter, if the regulated waters have less perennial flow. Extended drought conditions, especially those exacerbated by regulated flows, have adverse effects on northwestern pond turtles, by reducing aquatic habitat, increasing resource competition, further limiting reproductive success, and isolating populations (Bondi and Marks 2013, Reese and Welsh Jr. 1998, Ashton et al. 2015, USFWS 2023).

The proposed YRDP flows would substantively raise the flows of the affected reaches. In the North Yuba River, flows are anticipated to be substantively higher in July through November of all WYTs and higher in December through June of normal, dry and critically dry WYTs. On Oregon Creek, flows will be substantially higher (50 to 300 percent in April to June) from March through July and On the Middle Yuba River, flows are projected to be substantively higher in all WYTs

and months, but particularly in November, December and April through July, when they may be 60 to 200 percent higher. Finally, on the Upper Yuba River, flows are projected to be substantially higher April through December of all WYTs and year-round in drier WYTs. In summer months, they may increase 100 to 150 percent. Only on Oregon Creek in November and December of all WYTs and in wet and above normal WYTs (from December through June) of the North Yuba River would flows be lower. Overall, temperatures will remain the same on Oregon Creek and the Middle Yuba River, and lower on the North Yuba River and the Upper Yuba River.

As northwestern pond turtles prefer slower flows, the higher flows on the affected reaches may reduce the amount of suitable habitat along the reaches for the northwestern pond turtle. This may be particularly true for the periods on Oregon Creek when flows increase 50 to 300 percent, and on the Upper Yuba River when flows increase 100 to 150 percent. However, the change in potential habitat will depend on if there are still available areas of slow-moving currents or slack water, especially along the banks, on the affected reaches. Additionally, the increased likelihood of perennial flows on the affected reaches will allow the species to act more naturally and not encourage them to leave early for overwintering. These increased flows will also lessen the possibility of long-term droughts that can have adverse effects on northwestern pond turtles. Taken together, changes in flow are unlikely to have overall net negative or positive impact on the species.

The updated flows have potentially mixed impacts on the species, with increased flows and lower temperatures possibly reducing habitat, but more perennially available flows and fewer prolonged drought conditions improving northwestern pond turtle health by allowing more natural overwintering behavior and preventing loss of populations and habitat due to drought. Proposed YRDP's O&M, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including northwestern pond turtles, during Proposed YRDP activities, which would assist in balancing possibly negative effects from flow changes. Therefore, Proposed YRDP operations impacts on northwestern pond turtle would be less than significant.

California spotted owl, FC. FERC's 2019 FEIS stated that "…California spotted owl are forest raptors that are sensitive to disturbance while nesting, and human activity could result in nest abandonment or nest failure. Potential Project activities that could lead to nest disturbances include vegetation management, recreation activities, and facility maintenance… However, most Project activities are ongoing, routine, and limited in duration, and effects would be similar to existing conditions…" Flow changes are not anticipated to impact this species, since their habitat is not linked to the reservoirs or affected reaches.

The FEIS stated that "…. protection measures set forth in the *Integrated Vegetation Management Plan* (TR1) include specific buffers around nests, limited operating periods, and survey requirements…our analysis finds that these measures would be sufficient to ensure that Project effects on these birds are minimized…" (page 3-289 to 3-292). LU1 and TR2 provide similar protections, as described above. Additionally, GEN3 will provide Yuba Water employees with training on California spotted owls and any known occurrences, as well as the measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including California spotted owl, during Proposed YRDP activities. Therefore, Proposed YRDP operations on California spotted owl above Englebright would be less than significant.

State Threatened, Endangered and Fully Protected Species

Western bumblebee, SCE. FERC's 2019 FEIS stated that "Project-related activities, such as vegetation maintenance (e.g., tree trimming or removal)…routine Project road and facility maintenance, and recreation have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281). Proposed Project operations may collapse rodent burrows and remove logs used by Western bumblebees for nesting, potentially, killing or injuring nesting bees, along with destroying the nesting habitat. Some foraging habitat may also be removed during vegetation management, though most occur in already disturbed areas. Other foraging areas may be damaged or degraded due to dust, the introduction of invasive species or operation of vehicles or trampling by Yuba Water personnel. Flow changes are not anticipated to impact this species, since their habitat is not directly linked to the reservoirs or affected reaches.

In addressing these potential impacts special-status species and general wildlife, the FEIS (FERC 2019) states that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283). As described above, these would include LU1, which would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying foraging habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Revegetation of temporarily disturbed areas and sites cleared of invasive plants will prevent the loss of foraging habitat and improve degraded areas. Additionally, GEN3 will provide Yuba Water employees with training on Western bumblebees and any known occurrences, as well as the measures to protect them.

Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including Western bumblebees, during Proposed YRDP activities. Therefore, Proposed YRDP operations on western bumblebee would be less than significant.

Foothill yellow-legged frog, ST. The FERC FEIS (2019) analyzed potential impacts of Proposed YRDP operations on FYLF, stating, "…primary Project-related risks to foothill yellow-legged frogs result from altered flow regimes and flow fluctuations because the species' life history is adapted to the natural hydrograph of rivers it inhabits. Changes in water management under a new license could increase stress on frogs, influencing the timing of breeding or reducing reproductive success…YCWA's proposed recession rates would help protect foothill yellow-legged frog egg masses from stranding due to dewatering by eliminating unnaturally fast recession rates. YCWA's proposed minimum flows on Oregon Creek downstream of Log Cabin Diversion Dam and on the Middle Yuba River below Our House Diversion Dam (AR1) are higher than current minimum

flows and would provide more suitable habitat for foothill yellow-legged frog than current conditions. YCWA's proposed minimum flows below New Bullards Bar Dam would provide simulated water temperatures suitable for foothill yellow-legged frogs in the Yuba River downstream of the confluence of the North Yuba and Middle Yuba Rivers…YCWA also proposes to control spill events with measure AR4 and AR11, which would further increase habitat suitability for the foothill yellow-legged frog downstream of New Bullards Bar Dam…proposed flow changes including seasonal closures of Lohman Ridge Diversion Tunnel (AR11) and control of project spills (AR2 and AR12) would not affect water temperatures enough to adversely affect the frog's breeding and rearing—an argument that is supported by the temperature modeling data…" (page 3-294 to 3-298) (FERC 2019).

Additional potential impacts from Proposed YRDP operations include pesticide application, spread of chytrid fungus and sediment deposits downstream, but for each of these, Yuba Water proposes measures for the protection of FYLF, which the FEIS evaluates are sufficient to protect the species. These include Yuba Water employees being familiar with the species and its habitat, due to the annual training (GEN3), which will help them avoid known occurrences. The Integrated Vegetation Management Plan's requires consultation with agencies prior to any vegetation management within 300 feet of FYLF breeding sites and restrictions on pesticide use. Additionally, Yuba Water will monitor FYLF in the upper Yuba River under the Proposed Upper Yuba River Monitoring Plan (AR7), which will provide the opportunity to consult with agencies about additional protective measures should there be a noticeable decline in FYLF.

As noted, FYLF surveys and habitat modeling were performed in the Middle Yuba and Oregon creek reaches and provide the basis for impact analysis. Habitat modeling was not performed in the North Yuba below New Bullards bar or in the Yuba River downstream of the North Yuba and Middle Yuba River confluence as no FYLF were found in those reaches. FYLF breeding, egg mass and tadpole development are sensitive to changes in flow and temperature. Specifically, temperatures which consistently remain at or above the 11°C-12°C threshold are considered suitable for breeding and, based on breeding data collected during surveys conducted in the spring of 2011 and 2012 for Study 3.4 Special-Status Amphibians – Foothill Yellow-legged Frog Surveys this temperature threshold is typically met in April in these reaches. Therefore, the period of analysis for temperature impacts extends from April through July. In the Middle Yuba River and Oregon Creek watersheds, the timing of breeding varies by water year which is dictated by the magnitude of flows during the spring recession the associated water temperature. The growth and development of FYLF tadpoles is closely related to water temperature. In experimental enclosures, FYLF tadpoles selected temperatures between 16.5°C and 22.2°C (mean=19.6°C ± 0.6°C) (Catenazzi and Kupferberg 2013). Apart from the effects of flow on water temperature, rapid increases in flows may scour egg masses and relocate tadpoles downstream while rapid decreases in flows may dewater egg masses and strand tadpoles, thereby increasing the likelihood of mortality.

As compared to the Existing Conditions, the Proposed YRDP would increase flows and reduce water temperatures in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam during the potential breeding, egg mass and tadpole development season, over all water years in the simulation (WY 1970-2021). Downstream of Our House Diversion Dam, flow increases range from 11 cfs to 168 cfs, on average. Water temperatures reductions are less than 0.1 °C, on average. Downstream of Log

Cabin Diversion Dam, flow increases range from 0 cfs to 30 cfs on average while water temperature reductions ranged from approximately 0.0 °C to about 1.3°C, on average.

As a result of the water temperature reductions due to increased flows, breeding may be delayed but not negatively impacted. The reduction in water temperatures is within suitable temperature thresholds for tadpole development and would likely improve conditions in warmer drier water years.

FYLF habitat modeling in the Middle Yuba River and Oregon Creek demonstrated that the distribution of suitable habitat for both egg mass and tadpole life stages of FYLF tended to be near shore margins, where shallow, slow water conditions exist, or behind large boulders which create suitable velocity conditions. Increased base flows as a result of the Proposed YRDP (AR1) and a proposed spill cessation schedule from May 1 through July 15 at Our House Diversion Dam (AR2) and April 1 through July 31 at Log Cabin Diversion Dam (AR12) would provide protection to breeding adults selecting locations to oviposit egg masses and developing tadpoles during the spring and summer increasing the likelihood of egg mass and tadpole survival.

The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including FYLF, during Proposed YRDP activities, which would assist in balancing possibly negative effects from flow changes. Therefore, Proposed YRDP operations and flow impacts on FYLF would be less than significant.

Golden eagle, BGEPA, FP. Per the FERC's FEIS (2019), "…none of these occurrences include nesting birds or evidence of nesting activities. This suggests golden eagles are nonresident visitors to the Project…" (page 3-292). Per the FEIS, "…most Project activities are ongoing, routine, and limited in duration, and effects would be similar to existing conditions…" (page 3-293) (FERC 2019).

Since golden eagles do not nest at the Proposed YRDP, impacts to the species from operations would be limited to removal/damage of roosting and foraging habitat and disturbance of individuals that may be traveling through, roosting or foraging in the area during operations activities may affect golden eagles. Therefore, the impacts of Proposed YRDP operations on golden eagle would be less than significant.

Bald eagle, BGEPA, SE, FP. The FEIS (FERC 2019) analysis of Proposed YRDP operations on bald eagles determined that "…invasive species control, facility maintenance and construction, helicopter use for Project inspections, and road and recreation area maintenance could create noise near active nests and winter roosting sites...hikers, fishermen, and boaters could cause similar disturbances. Vegetation management activities could also result in the removal of nest or roost trees. Activities that require extended human presence or involving heavy equipment (e.g., backhoe or tracked equipment) or loud mechanized equipment (e.g., chainsaws, weed whackers, shredders, or chippers) would have the greatest potential adverse effect on these species…" Flow changes are not anticipated to impact this species, since their habitat is not linked to the reservoirs or affected reaches.

However, the FEIS also determined that "…implementation of YCWA's proposed *Bald Eagle and American Peregrine Falcon Management* Plan would assure that disturbance is minimized

surrounding nests and associated habitats important for nest success…" (page 3-289 to 3-292). Additional measures and plans also provide protection for bald eagles, including GS3, which requires an LOP and nest buffer for bald eagles during wood management and GEN3, which requires Yuba Water employees to take an annual training, which will provide information about the species and known occurrences.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including bald eagles, during Proposed YRDP activities. Therefore, Proposed YRDP operations on bald eagles above Englebright would be less than significant.

Great gray owl, SE. The FEIS (FERC 2019) stated that "…potential effects [to great gray owl] would include daily visits, monthly maintenance, and an annual safety inspection. On the Log Cabin Diversion Dam access road, annual surface maintenance and vegetation management could [also] disturb the nesting pair…" (page 3-291 to 3-292). Similar to other special-status raptors, the FEIS analyzed that Yuba Water's proposed measures and plans would adequately protect the species. As described above, these include GEN3, which provides employee training; TR1, which requires revegetation of temporarily disturbed areas and LOPs and nest buffers for nesting birds and TR2, which also requires LOPs and nest buffers, along with recording of incidental sitings of raptors, including great gray owl.

Only one occurrence of great gray owls is known to occur in or near the Proposed YRDP, in the area of the Log Cabin and Our House diversion dams, so only Proposed YRDP activities in or near those facilities have the potential to impact the species. These impacts would be of limited duration and severity, except for the possibility of vehicle collision with YRDP traffic. However, given the relative infrequency of Proposed YRDP activities in the area and the singular occurrence, impacts to great gray owls would be less than significant. Additionally, the Proposed YRDP's measures and plans would provide added protections.

Little willow flycatcher. SE. Little willow flycatcher was observed at a Yuba Water willow revegetation site along Oregon Creek, a few miles downstream of Log Cabin Diversion Dam during sediment management activities in 2021. This observation is the only known location of little willow flycatcher near the Proposed YRDP, and there are limited areas of suitable riparian habitat in the Proposed YRDP boundary, though it occurs along the affected reaches.

The FEIS (FERC 2019) analysis of Proposed YRDP operations on special-status birds determined that "…invasive species control, facility maintenance and construction, helicopter use for Project inspections, and road and recreation area maintenance could create noise near active nests and winter roosting sites...hikers, fishermen, and boaters could cause similar disturbances. Vegetation management activities could also result in the removal of nest or roost trees. Activities that require extended human presence or involving heavy equipment (e.g., backhoe or tracked equipment) or loud mechanized equipment (e.g., chainsaws, weed whackers, shredders, or chippers) would have the greatest potential adverse effect on these species…" Proposed YRDP activities would not be anticipated in many of the areas of riparian habitat appropriate to the species, and the implementation of proposed measures and plans would limit impacts. The FEIS stated that, "…protection measures set forth in the *Integrated Vegetation Management Plan* (TR1) include

specific buffers around nests, limited operating periods, and survey requirements that are specifically described for…special-status birds. Our analysis finds that these measures would be sufficient to ensure that Project effects on these birds are minimized…" (page 3-289 to 3-292). The Integrated Vegetation Management Plan also requires the revegetation of temporarily disturbed areas and sites cleared of invasive plants, which will prevent the loss of habitat and improve degraded areas. Additionally, the Transportation Management Plan would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Under GEN3 will provide Yuba Water employees with training on little willow flycatcher and any known occurrences, as well as the measures to protect them. Finally, riparian vegetation will be monitored in the upper Yuba River (AR7) for its health and response to Proposed YRDP operations.

Flows under the Proposed YRDP would be expected to be higher on all the affected reaches. This would facilitate riparian vegetation health on affected reaches, which would increase and improve habitat for the little willow flycatcher.

Only one occurrence of little willow flycatcher is known to occur in or near the Proposed YRDP, downstream of Log Cabin Diversion Dams, and only Proposed YRDP activities in or near riparian have the potential to impact the species. However, given the relative infrequency of Proposed YRDP activities in known riparian areas, and the singular occurrence, impacts to little willow flycatcher would be less than significant. Additionally, the Proposed YRDP's measures and plans would limit the potential for impacts and higher flows on affected reaches would be anticipated to improve riparian habitat.

Ringtail, FP. Per the FEIS (FERC 2019), "…human activity, improper waste disposal, and the existence of Project facilities (i.e., buildings) could adversely affect ringtail…" Ringtails are known to be attracted to human activity, especially when sources of food are accessible. This greatly increases the chances of direct interactions with humans and the potential for impacts to ringtail within the Proposed YRDP. This would include potential collisions with YRDP traffic and ingesting garbage, which can cause sickness or death. Individuals may also use YRDP facilities for shelter and warmth, leading to the potential for electrocution or dangerous interactions with Yuba Water personnel. Flow changes are not anticipated to impact this species, since their habitat is not directly linked to the reservoirs or affected reaches.

The YRDP includes a *Ringtail Management Plan*, described above, and the FEIS determined that "…measures outlined in the *Ringtail Management Plan* should be adequate to protect ringtail in the Project Area for the term of the new license…" (page 3-285). Specifically, the Plan aims to keep ringtails out of Project facilities and away from electrocution hazards. GEN3, which is also detailed in the Plan, will provide Yuba Water personnel with information on ringtails and their known occurrences, as well as measures for their protection. These combined protective measures will reduce interactions with humans and YRDP vehicles and equipment.

Ringtails are listed as FP and take of the species is prohibited except when authorized in specific circumstances, rendering any impact to ringtails that may be considered 'take' as potentially significant. However, the Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and

plans are anticipated to provide new and improved protections for special-status species, including ringtail, during Proposed YRDP activities. Therefore, Proposed YRDP operations impacts on ringtail above Englebright would be less than significant.

Other Special-Status Species

Special-status plants. Operations activities have the potential to impact special-status plants through compaction, trampling, indirect herbicide application, and removal of habitat. Currently present and potential special-status plants will not be impacted by flow changes, as their habitats are not tied to the affected reservoirs or reaches.

Per the FERC FEIS (2019), "…effects from Project operation and maintenance on special-status plants would be minor because they would affect a small number of occurrences…proposed measures…would keep any potential effects to low levels…" (page 3-271). The main protective measures for special-status plants are located in TR1, which requires Yuba Water to survey for special-status plant occurrences on the Proposed YRDP and consult with resource agencies on protective measures before conducting vegetation management near occurrences. Additionally, TR1 contains provisions for the prevention and management of invasive plants, which can outcompete native plants and otherwise degrade habitat. Areas of temporary disturbance and where invasive plants have been removed are required to be revegetated, which will prevent the loss of and improve habitats that can be utilized by special-status plants. LU1 requires vehicles to stay on designated roads and access routes, which reduces damage to habitat and introduction of invasive plant species from tires. GEN3, which provides employee training, will inform Yuba Water personnel on special-status plants, their known occurrence locations and measures to protect them during YRDP operations.

Only five species of special-status plants are known to occur on the Proposed YRDP. The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status plant species during Proposed YRDP activities. Therefore, Proposed YRDP operations impacts on special-status plants above Englebright would be less than significant.

Coast horned lizard, SSC. Per FERC's 2019 FEIS, "Project-related activities such as vegetation maintenance…routine Project road and facility maintenance, and recreation have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project…" (page 3-281). Proposed Project operations may collapse burrows used by coast horned lizard, potentially killing or injuring lizards, along with destroying the habitat. Some habitat may also be removed or damaged during vegetation management, though most management occurs in already disturbed areas. Other areas may be damaged or degraded due to dust, the introduction of invasive species or operation of vehicles or trampling by Yuba Water personnel. Flow changes are not anticipated to impact this species, since their habitat is not directly linked to the reservoirs or affected reaches.

In addressing these potential impacts to wildlife, including coast horned lizard, the FEIS (FERC 2019) states that "…implementation of YCWA's proposed protection, mitigation, and

enhancement measures would protect sensitive species…" (page 3-283). As described above, these would include LU1, which would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Revegetation of temporarily disturbed areas and sites cleared of invasive plants will prevent the loss of habitat and improve degraded areas. Additionally, GEN3 will provide Yuba Water employees with training on coast horned lizard and any known occurrences, as well as the measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including coast horned lizards, during Proposed YRDP activities. Therefore, Proposed YRDP operations on coast horned lizards would be less than significant.

Special-status raptors. American peregrine falcon was analyzed in FERC's FEIS (2019), which concluded that "…Project recreation on the Yuba River below New Bullards Bar Dam could disturb American peregrine falcons…" (page 3-283). According to the FERC's FEIS, American goshawk are "…sensitive to disturbance while nesting, and human activity could result in nest abandonment or nest failure" (page 3-291). Other impacts to special-status raptors are discussed in FERC's FEIS (2019), including that, "…operation and maintenance activities, such as invasive species control, facility maintenance and construction, helicopter use for Project inspections, and road and recreation area maintenance could create noise near active nests and winter roosting sites of special-status birds in the Project Area. Recreation users such as hikers, fishermen, and boaters could cause similar disturbances. Vegetation management activities could also result in the removal of nest or roost trees. Activities that require extended human presence or involving heavy equipment (e.g., backhoe or tracked equipment) or loud mechanized equipment (e.g., chainsaws, weed whackers, shredders, or chippers) would have the greatest potential adverse effect on these species…" (page 3-289). Flow changes are not anticipated to impact special-status raptors, since their habitat is not linked to the reservoirs or affected reaches.

However, the analysis in the FEIS determined that, "…The protection measures set forth in the *Integrated Vegetation Management Plan* (TR1) include specific buffers around nests, limited operating periods, and survey requirements that are specifically described for each of the discussed special-status birds. Our analysis finds that these measures would be sufficient to ensure that Project effects on these birds are minimized…" (page 3-290). For American peregrine falcon, the FERC FEIS (2019) further states that, "…implementation of YCWA's proposed *Bald Eagle and American Peregrine Falcon Management Plan* would assure that disturbance is minimized surrounding nests and associated habitats important for nest success…" (page 3-290). Additional measures and plans also provide protection for nesting birds, including GS3, which requires an LOP and nest buffer for raptors during wood management. LU1 and TR1 also requires LOP and nesting buffers for raptors, in these cases, for road maintenance and vegetation management, and GEN3, which requires Yuba Water employees to take an annual training, will provide information about special-status raptors, their known occurrences, and measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status raptors during Proposed YRDP activities.

Therefore, Proposed YRDP operations on special-status raptors above Englebright would be less than significant.

Other special-status and migratory birds. The FEIS (FERC 2019) analysis of Proposed YRDP operations on special-status birds determined that "…invasive species control, facility maintenance and construction, helicopter use for Project inspections, and road and recreation area maintenance could create noise near active nests and winter roosting sites...hikers, fishermen, and boaters could cause similar disturbances. Vegetation management activities could also result in the removal of nest or roost trees. Activities that require extended human presence or involving heavy equipment (e.g., backhoe or tracked equipment) or loud mechanized equipment (e.g., chainsaws, weed whackers, shredders, or chippers) would have the greatest potential adverse effect on these species…" Flow changes are not anticipated to impact special-status and the majority of migratory birds, since their habitat is not linked to the reservoirs or affected reaches. For those species that use riparian habitat, per Impact PP-4 (described below), the proposed YRDP will be beneficial and promote healthier riparian vegetation, so bird species utilizing these habitats will also benefit.

However, the FEIS also analyzed that, "…protection measures set forth in the Integrated Vegetation Management Plan (TR1) include specific buffers around nests, limited operating periods, and survey requirements that are specifically described for…special-status birds. Our analysis finds that these measures would be sufficient to ensure that Project effects on these birds are minimized…" (page 3-289 to 3-292). Additional measures and plans also provide protection for nesting birds, including GS3, which requires an LOP and nest buffer for raptors during wood management. LU1 and TR1 also requires LOP and nesting buffers for raptors, in these cases, for road maintenance and vegetation management, and GEN3, which requires Yuba Water employees to take an annual training, which will provide information about special-status and migratory birds, their known occurrences, and measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status and migratory birds during Proposed YRDP activities. Therefore, Proposed YRDP operations on special-status and migratory birds above Englebright would be less than significant.

Special-status bats. The FEIS (FERC 2019) mentions that "…bats are sensitive to anthropogenic impacts, both as a direct result of human presence and indirect effects from disturbances to their roosts and surrounding habitat…" (page 3-286), listing potential impacts such as decreased roost habitat, young abandonment, decreases fecundity of successive generations, and early awakening from hibernation and subsequent decreased winter survival rate. Bat roosts or nurseries in YRDP facilities also increase the possibility for interactions that result in negative impacts to bats, as well as potential disease transmission to humans. White-nose syndrome, a fungus which is often lethal to bats, can also be carried by humans on clothing and equipment that has been in a contaminated area and not properly decontaminated before moving into areas free of the fungus.

The new license would require the implementation of a *Bat Management Plan*, and the FEIS evaluated that "…implementation of the proposed plan would be protect bats within the YRDP area, especially during the maternity and winter hibernating seasons…" (page 3-286). This Plan requires surveys of facilities where bats may be present to determine presence and erect humane

exclusionary devices. This reduces the possibility of human and bat interactions, including the spread of the fungus that causes white nose syndrome. GEN3, which requires Yuba Water employees to take an annual training, will provide information about special-status bats, their known occurrences, and measures to protect them.

The Proposed YRDP's operations, outside of flows, are not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status bats during Proposed YRDP activities. Therefore, Proposed YRDP operations on special-status bats above Englebright would be less than significant.

Sierra marten, FSS-P, FSS-T. The FEIS (FERC 2019) determined that "Project-related activities such as… routine Project road and facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281). Vegetation management is the main Proposed YRDP activity that might cause impacts to Sierra marten, although the species inhabits mostly old growth forest, which the Proposed YRDP operations would be unlikely to impact. Sierra martens may also be struck and injured or killed by Proposed YRDP road use. Flow changes are not anticipated to impact Sierra marten, since their habitat is not linked to the reservoirs or affected reaches.

The FEIS (FERC 2019) also determined that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283). As described above, these would include LU1, which would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Additionally, GEN3 will provide Yuba Water employees with training on Sierra marten, as well as measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including Sierra marten, during Proposed YRDP activities. Therefore, Proposed YRDP operations on Sierra marten would be less than significant.

American badger, SSC. The FEIS determined that Proposed "Project-related activities such as… routine Project road and facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281). Vegetation management is the main Proposed YRDP activity that might cause impacts to American badger. American badgers may also be struck and injured or killed by Proposed YRDP road use. Flow changes are not anticipated to impact American badgers, since their habitat is not linked to the reservoirs or affected reaches.

The FEIS (FERC 2019) also determined that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283). As described above, these would include LU1, which would keep vehicles and construction

equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Additionally, GEN3 will provide Yuba Water employees with training on American badger, as well as measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including American badger, during Proposed YRDP activities. Therefore, Proposed YRDP operations on American badger would be less than significant.

CEQA Conclusion

Proposed flows are anticipated to maintain or improve habitats for those special-status species (specifically northwestern pond turtle, FYLF and little willow flycatcher) that live in or near affected reaches and/or utilize the habitats in or along them.

Outside of flows, the Proposed YRDP's operations are similar to existing conditions, although there will be increased recreation at the added sites. Operations for the Proposed YRDP could impact special-status species through combined direct and non-flow-related indirect impacts, including by death or injury to individuals from vehicle or equipment strikes or trampling by YRDP personnel or recreationists, habitat loss or degradation (including through introduction of invasive species), permanent or temporary disturbance caused by YRDP operations (e.g., noise, dust, vibrations, etc.). The Proposed YRDP's measures and management plans include provisions for protecting special-status species specifically during O&M activities, as detailed above, that will ensure the impacts of these activities on all known or potential species are less than significant.

Therefore, under the Proposed YRDP impacts to special-status species from operations upstream of Englebright Dam would be **less than significant.** Therefore, no mitigation is required.

YRDP Impact BIO-PP-3: Construction Impacts on Riparian Habitat and Sensitive Natural Communities

The proposed construction project footprints were overlaid with the modeled and ground-truthed vegetation data for the existing YRDP boundary to determine the acres of each mapped vegetation community that may be impacted by construction activities. Table 10.5-2 details the acres of each vegetation community contained in the construction footprints, and Appendix 10H includes figures of the proposed construction footprints and the mapped vegetation communities.

Table 10.5-2. Impacts to Mapped Natural Communities Due to Proposed Construction.

Vegetation Community	Sensitive Habitat	Acres
Barren	N	0.131
Black Oak Woodland	N	3.531
Canyon Live Oak Woodland	N	42.011
Douglas Fir	N	32.674
Douglas Fir – Tan Oak Forest	N	108.372
Foothill Pine Woodland	N	0.505
Fremont Cottonwood – Red Willow Forest	Y	3.654
Lacustrine	Y	18.270
Mixed Oak Woodland	N	0.412
Montane Hardwood	N	1.127
Montane Hardwood-Conifer	N	16.223
Ponderosa Pine – Douglas Fir Forest	N	47.002
Ponderosa Pine – Incense Cedar Forest	N	0.457
Sierran Mixed Conifer	N	18.150
Tan Oak Forest	Y	44.828
	Total Habitat	**337.345**
	Total Sensitive Habitat	**66.752**

Yuba Water is projecting approximately 66.75 acres of impacts to sensitive habitats during Proposed YRDP construction. Of these, 18.27 acres are lacustrine, which are discussed below. There are 3.65 acres of the riparian habitat, Fremont Cottonwood – Red Willow Forest, and 44.83 acres of tan oak forest. These impacts are from the construction of the Garden Point Boat in Campground, Our House River Access, Our House Fish Release Outlet, Log Cabin Fish Release Outlet, Moran Boating Site, Shadow Ridge Campground, Tailwater Site, and New Colgate River Access. Permanent impacts will require off-site mitigation but temporary impacts such as construction of temporary staging areas or tree trimming only can be mitigated on-site. Final design plans will be used to determine how many of the 66.75 acres of impacts to sensitive habitats will be temporary versus permanent. At this time, it is assumed all 66.75 acres will be permanent impacts.

CEQA Conclusion

As explained in Chapter 2, Project Description, Yuba Water will follow BMPs in the design and implementation of Proposed Project construction. Yuba Water will also follow measures and plans in the Proposed license, including:

- LU1: Implement Transportation Management Plan will prevent running over sensitive habitats, reduces introduction and spread of invasive species and generally minimizes damage to non-developed areas. The Plan will also help prevent impacts to sensitive habitats beyond those inside the construction footprint.
- RR1: Implement Recreation Facilities Plan would assist in identifying sensitive habitats prior to the design of the recreation facilities so they may be avoided where possible and impacts minimized, when they cannot be avoided. This will assist the planners in siting recreation facilities and construction away from sensitive habitat.
- TR1: Implement Integrated Vegetation Management Plan will prevent the loss of habitat during construction of those areas that are only temporarily disturbed (such as temporary lay down areas).

However, these provisions will not provide full protection for sensitive habitat sufficiently to prevent potentially significant impacts to sensitive habitats during construction. Therefore, Yuba

Water will implement avoidance and mitigation measures, described in Section 10.7, which will prevent or mitigate for impact, as described below:

- **BIO-1: Project Footprint** will minimize loss of sensitive natural communities.
- **BIO-2: Garbage and Trash** will keep work areas free of garbage, including microtrash.
- **BIO-3: Vehicular Best Management Practices** will limit the destruction of sensitive communities from crushing and fuel spills.
- **BIO-4: Clean Fill** will limit secondary impacts to work areas and the sensitive communities by preventing the introduction of non-native species and/or contaminated fill which would degrade sites.
- **BIO-5: Worker Environmental Awareness Program (WEAP)** assist in the implementation of required protective measures, such that they are effective in protecting sensitive communities, as required by the CEQA document (as well as license measures, management plans and permits).
- **BIO-6: Flagging Sensitive Resources** will prevent direct harm to sensitive communities through being run through or indirect like equipment and workers spreading invasive species into sensitive areas.
- **BIO-7: Minimization of Vegetation Removal** would limit any removal or disturbance of vegetation to the minimum necessary, preventing destruction or damage sensitive communities by project activities.
- **BIO-11: No Net Loss of Sensitive Habitat** will prevent permanent destruction of already rare habitat, such as wetlands and riparian communities.
- **BIO-12: Pre-construction Surveys** will identify occurrences of sensitive communities in areas that have not been surveyed recently, such that impacts may be more accurately determined and required avoidance and mitigation measures properly employed prior to and during activities.
- **BIO-15: Avoidance of Aquatic Habitat** requires that all impacts to delineated aquatic resources would be limited to the amount necessary for completion of work activities. This prevents death or injury of species within these areas, as well as destruction or damage to their aquatic habitat, which is also a sensitive resource.

As described above, Yuba Water would avoid all impacts to sensitive vegetation communities to the maximum extent practicable and implementation of avoidance and mitigation measures in conjunction with the Proposed YRDP measures and plans would reduce impacts of Proposed YRDP construction on riparian habitat and sensitive natural communities to **less than significant with mitigation incorporated (MM-BIO 1-7, 11, 12, 15)**.

YRDP Impact BIO-PP-4: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Yuba Water's proposed flow measures (AR2 and AR9) would increase existing minimum flows and establish five WYTs that would trigger various conditions (e.g., minimum flow releases) in

the new license. This would allow Yuba Water to operate the projects using WYT thresholds based on historical runoff hydrology accounts for overall basin wetness and inflows. The monthly flows of the Proposed YRDP would increase from the Existing Condition in correspondence with riparian germination and recruitment months. Increased springtime flows, particularly in wet or above normal WYT would be likely to scour banks above bankfull where riparian tree species (i.e., white alder) are more likely to successfully recruit. These flow measures may increase lateral stratification and continue recruitment of riparian plant species where fines are present. In the bedrock-dominated reaches, high flow events may scour riparian vegetation, but the Proposed Projects flows would support re-establishment. Higher flows may also reduce the presence of NNIP by increasing the extent and duration of soil saturation where soils are present, particularly in Oregon Creek.

The Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir *Woody Material Management Plan* (GS3) includes measures for the collection, storage, and disposal of woody material from project reservoirs. Yuba Water would allow woody material and rootwads (unless determined to be a risk to dam safety) to pass downstream of the Our House and Log Cabin Diversion Dams, allowing LWM to be captured in the streams. LWM has the potential to influence pool formation increase shade and collect sediment and organic litter within streambeds (Benda and Litschert 2013) and may contribute organic material as it decays. Floating LWM in New Bullards Bar Reservoir would be annually collected, temporarily stored in select coves, and disposed of LWM from New Bullards Bar Reservoir would not impact any of the reaches.

Additionally, Yuba Water proposes to monitor riparian vegetation in the upper Yuba River (AR7) to characterize future changes in riparian vegetation composition and structure. This measure would provide the opportunity to consult with agencies and determine if different management strategies would be needed.

The other sensitive community, tan oak forest, is not located in areas proposed to be impacted by operational activities. Therefore, no impacts to other sensitive communities are anticipated.

CEQA Conclusion

Under the Proposed YRDP, riparian habitat would be maintained or improved by providing higher flows overall and by mimicking the natural hydrograph in the Middle Yuba River and Oregon Creek (AR2 and AR9), by increasing availability of sediment and LWM in all reaches upstream of Englebright Reservoir (GS2 and GS3), and by monitoring changes in riparian vegetation (AR7). Implementing flows that mimic the natural hydrograph, and higher flows would provide the opportunity for riparia to distribute within a greater variety of stages within the channel. Allowing sediment and LWM to pass the diversions would allow fines to be captured and may increase substrate for riparian establishment, and LWM may affect local geomorphology processes, capture fines, or contribute organic material to the system. Therefore, a **beneficial** impact from operations to riparian habitat is anticipated.

YRDP Impact BIO-PP-5: Construction Impacts on Wildlife Movement

Within the YRDP boundary, there are several areas identified as being important to ecological connectivity. A large NLB extends from the New Bullards Bar Reservoir to the Englebright Dam,

and includes the North Yuba River, the Yuba River, and the Englebright Reservoir. An ECA overlaps the NLB and encompasses Englebright Reservoir and a section of the Yuba River just above Englebright Reservoir. Additionally, the migration corridor for the Downieville-Nevada City mule deer herd runs through the YRDP boundary at Our House Diversion Dam. There are no other known migratory corridors or nursery sites (CDFW 2025a) in the YRDP boundary or affected reaches above Englebright Reservoir.

Proposed YRDP construction would primarily occur in developed areas, including the New Colgate Powerhouse new tailwater depression system, Our House and Log Cabin Diversion Dams fish release outlets, modification to the Lohman Ridge Tunnel Intake, recreation facility enhancements and non-routine maintenance and upgrades to PARs under the *Transportation System Management Plan*. However, the Recreation Facilities Plan proposes six new facilities- Kelly Ridge Campground, Shadow Ridge Campground, Cottage Creek Picnic Site, Dark Day RV Dump Station, New Colgate Powerhouse River Access and West Shoreline Trail- several of which are in currently undeveloped locations. In addition, some of the current recreation areas would have rehabilitation/upgrades which may expand their overall footprint into undeveloped areas.

The Proposed YRDP's new and enhanced recreation facilities, which constitute the only additions to the Proposed YRDP that can inhibit the movement of wildlife species, do not co-occur with the mapped NLB, ECA or migration corridors. The Proposed YRDP-related modifications to existing recreation areas and development of the new recreation facilities may function as localized barriers to terrestrial wildlife that may delay or temporarily hinder movement, both during and after construction. However, none of these Proposed YRDP' features represent major impediments or expose wildlife to risk by forcing them into more dangerous alternative routes, either through their use or their maintenance.

CEQA Conclusion

Under the Proposed YRDP above Englebright Dam, direct and indirect impacts from construction to wildlife movement corridors are not anticipated and therefore, would be **less than significant.**

YRDP Impact BIO-PP-6: Operations Impacts on Wildlife Movement

There is a large NLB that covers the arm of the Yuba River both above and below New Bullards Bar, going all the way to Englebright Reservoir on the affected Yuba River below New Bullards Bar. An ECA connected to the NLB encompasses a section of the affected Yuba River reach above and all Englebright Reservoir. The migration corridor for the Downieville-Nevada City mule deer herd runs through the Proposed YRDP boundary at Our House Diversion Dam. There are no other known migratory corridors or nursery sites.

YRDP O&M would continue at the existing facilities as described in Chapter 2, and expand to newly built, enhanced or updated facilities as construction on them is completed. Additionally, existing operations would not be changed aside from changes to flow requirements; the addition of non-native invasive plant management, restoration/revegetation of disturbed areas; and additional protections for sensitive resources in the Proposed YRDP measures and plans described above. The removal of non-native invasive plants and revegetation of disturbed areas may slightly

improve natural habitats, but not enough to increase the permeability of wildlife movement corridors.

The proposed flows will increase on all the affected reaches, including up to 300 percent at different periods on Oregon Creek and 200 percent on the Middle Yuba River. These flows may scour the sides of the reaches and shift some landforms in and along their banks. However, they are not anticipated to be high enough to change wildlife movement in either beneficial or negative ways.

CEQA Conclusion

Under the Proposed YRDP above Englebright Dam, direct and indirect impacts from operations to movement of wildlife species, migratory corridors and use of wildlife nursery sites would be **less than significant**.

YRDP Impact BIO-PP-7: Construction Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The bulk of the Proposed YRDP construction will be performed in Yuba County, but Our House Diversion Dam is in Nevada and Sierra counties. Therefore, construction in Nevada and Sierra counties will consist solely of the work at Our House Diversion Dam, which includes construction at the fish release outlets, Lohman Ridge Tunnel outtake, recreation kiosk and signage, recreation facility updates (including a trail) and roadwork.

There are multiple policies related to biological resources under the Nevada County General Plan (1995) and Sierra County General Plan (1996, updated 2012) that construction at Our House Diversion Dam may conflict with. The Nevada County General Plan (1995) policies include standards for project designs to include consideration of non-disturbance of biological resources (6.9), determine special-status species habitat that could be impacted by construction (13.2A), prohibition of degradation of habitat or reduction in protected species by construction that may remove more than 1 acre of riparian or wetland habitat (13.2B), no net loss or habitat functions should be caused by construction affecting more than 1 acre of land where rare and endangered species and wetlands (13.4A), and to protect native oak trees with a trunk diameter of 36 inches or greater (13.9). The Nevada County Code 10.14.040 directs the avoidance of the introduction of aquatic invasive species into county waters, and 12.04.215 intends to minimize tree removal and protect existing trees during construction.

The Sierra County General Plan (1995) contains guidelines and specifies use of mitigation guidelines based on current scientific knowledge (29). There are also specific guidelines for bald eagles, peregrine falcon, great gray owl, heron nesting colonies, wood ducks, other nesting birds, target amphibians, and deer.

The remainder of the Proposed YRDP construction will occur in Yuba County and fall under the policies of the Yuba County General Plan (2011), which includes protections for critical habitat (including for CRLF), conduct an assessment of new construction and avoid adverse impacts to special-status species habitat and mitigate unavoidable impacts (NR5.1), preserve and incorporate native vegetation to the extent possible (NR5.4), avoid loss of jurisdictional wetlands (NR5.9), avoid placing barriers to wildlife movement (NR5.13), and preserve existing oak trees that have a

diameter at breast height of 6 inches or greater and all other trees of a diameter at breast height of 30 inches or greater (NR10.1).

CEQA Conclusion

The Proposed YRDP has measures and plans that will address some of the requirements of the local policies and ordinances, including implementing an Aquatic Invasive Species Management Plan that provides BMPs to prevent introduction of aquatic invasive species; a Transportation Management Plan that implements LOPs for special-status wildlife, as well as invasives species preventions provisions; an Integrated Vegetation Management Plan with BMPs for the prevention of introduction and spread of invasive plant species and revegetation of temporarily disturbed construction areas; and a Bald Eagle and American Peregrine Falcon Management Plan that establishes LOPs and nest buffers for both species, as well as incidentally located raptor nests.

However, these provisions will not fully prevent conflicts with local policies and ordinances. Therefore, Yuba Water will implement avoidance and mitigation measures (described in Section 10.7, below), which will avoid, minimize or mitigate conflicts as follows:

- **BIO-1: Project Footprint** will minimize loss of habitat and other impacts to wildlife.
- **BIO-2: Garbage and Trash** keeps work areas free of garbage, including microtrash, which can damage habitat, especially if it spreads outside of the work footprints to surrounding areas. Some species may also eat garbage, which can make them sick or even kill them.
- **BIO-3: Vehicular Best Management Practices** will limit destruction of habitat from crushing and fuel spills, as well as collisions that can cause injury or death of species on or near roads and other construction areas.
- **BIO-4: Clean Fill** will limit secondary impacts to work areas and the species that inhabit them by preventing the introduction of non-native species and/or contaminated fill which would degrade sites.
- **BIO-5: Worker Environmental Awareness Program (WEAP)** will assist in the implementation of required protective measures, such that they are effective in protecting species and habitat, as required by then CEQA document (as well as license measures, management plans and other permits).
- **BIO-6: Flagging Sensitive Resources** will prevent direct harm to species, such as death or injury, and indirect, such as damage to habitat or introduction of non-native species.
- **BIO-7: Minimization of Vegetation Removal** would limit any removal or disturbance of vegetation to the minimum necessary, preventing destruction or damage sensitive communities by project activities.
- **BIO-8: Special-Status Semi-Aquatic Species Protection** will prevent direct harm to species via trampling, crushing or other injury, as well as limiting non-flow-related indirect harm by pausing work until species clear the work area so they are not flushed or disturbed by activities (such as noise or dust).

- **BIO-9: Avoid Work in Flowing Water** will prevent fouling of both work areas and downstream habitats by sediment or other materials that would be stirred up by equipment.
- **BIO-10: Migratory Bird and Raptor Surveys** will locate nests and require buffers to protect impacts to them.
- **BIO-11: No Net Loss of Sensitive Habitat** prevents permanent destruction of already rare habitat, such as wetlands and riparian communities, which often serves as the habitat for special-status plants and wildlife, as well.
- **BIO-12: Pre-construction Surveys** will more accurately determine potential impacts to sensitive resources and require avoidance and avoidance and mitigation measures are properly employed prior to and during activities.
- **BIO-13: Special-status Wildlife Species** will protect the species from death or injury from workers and equipment and other impacts of the work, such as noise, dust or vibrations.
- **BIO-14: Excavations** will prevent small wildlife from being killed or injured during excavation activities.
- **BIO-15: Avoidance of Aquatic Habitat** will prevent death or injury of species within these areas, as well as destruction or damage to their aquatic habitat, which is also a sensitive resource.

As described, under the Proposed YRDP above Englebright Dam, the potential conflicts with local policies and ordinances would be addressed through a combination of Proposed YRDP measures and plans and the addition of avoidance and mitigation measures. Through this combination, conflicts with local policies and ordinances would be **less than significant with mitigation incorporated (MM-BIO-1 through MM-BIO-15)**.

YRDP Impact BIO-PP-8: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The bulk of the Proposed YRDP lies in Yuba County, but Our House Diversion Dam is in Nevada and Sierra counties. Therefore, operations in Nevada and Sierra counties will consist solely of those at or near Our House Diversion Dam.

There are multiple policies related to biological resources under the Nevada County General Plan (1995) and Sierra County General Plan (1996, updated 2012) that operations at Our House Diversion Dam may conflict with. The Nevada County General Plan (1995) policies include prohibition of degradation of habitat or reduction in protected species by operations that may remove more than 1 acre of riparian or wetland habitat (13.2B), no net loss or habitat functions should be caused by operations affecting more than 1 acre of land where rare and endangered species and wetlands (13.4A), and to protect native oak trees with a trunk diameter of 36 inches or greater (13.9). The Nevada County Code 10.14.040 directs the avoidance of the introduction of aquatic invasive species into county waters, and 12.04.215 intends to minimize tree removal and protect existing trees.

The Sierra County General Plan (1995) contains specific guidelines for bald eagles, peregrine falcon, great gray owl, heron nesting colonies, wood ducks, other nesting birds, target amphibians, and deer.

The remainder of the Proposed YRDP operations will occur in Yuba County and fall under the policies of the Yuba County General Plan (2011), which includes protections for critical habitat (including for CRLF), preserve and incorporate native vegetation to the extent possible (NR5.4), avoid loss of jurisdictional wetlands (NR5.9), avoid placing barriers to wildlife movement (NR5.13), and preserve existing oak trees that have a diameter at breast height of 6 inches or greater and all other trees of a diameter at breast height of 30 inches or greater (NR10.1).

CEQA Conclusion

Per the discussion above, the Proposed YRDP operations will have a beneficial impact on riparian habitats (YRDP Impact BIO-PP-4), no impacts on wetlands, and less than significant impacts on wildlife movement (YRDP Impact BIO-PP-6). Additionally, vegetation management will remain essentially the same as under existing conditions, so no new areas of vegetation, including large trees, are proposed for removal under the Proposed YRDP operations.

For the remaining potential conflicts with local policies and ordinances, the Proposed YRDP has measures and plans that will address their requirements, including implementing an Aquatic Invasive Species Management Plan that provides BMPs to prevent introduction of aquatic invasive species; a Woody Management Plan that requires the protection of specific special-status species during the annual collection, storage and disposal of wood material on New Bullards Bar; a Transportation Management Plan that implements LOPs for special-status wildlife, as well as invasives species preventions provisions; an Integrated Vegetation Management Plan with BMPs for the prevention of introduction and spread of invasive plant species, revegetation of temporarily disturbed or otherwise cleared areas, surveys for special-status plants every 10 years, consultation with agencies for vegetation activities in special-status plant occurrences and protections for nesting birds, CRLF, FYLF and northwestern pond turtles; a Bald Eagle and American Peregrine Falcon Management Plan that establishes LOPs and nest buffers for both species, as well as incidentally located raptor nests; a Ringtail Management Plan to prevent ringtail encounters with people and electrocutions; and a Bat Management Plan to limit interactions with humans and the spread of white-nose syndrome.

Therefore, under the Proposed YRDP above Englebright Dam, conflicts to local policies and ordinances by Proposed YRDP operations would be **less than significant**.

10.5.1.2 Areas Downstream of Englebright Dam - Lower Yuba River

YRDP Impact BIO-PP-9: Operations Impacts on Special-Status Species

Based on the results of the literature review, past surveys, relicensing studies, and other available data, numerous special-status species are known to occur or have the potential to occur within the YRDP Boundary (see Appendix 10E). The species or species groups identified below were determined to have the potential to occur in areas of YRDP operations below Englebright Dam and/or along the lower Yuba River, as described in Chapter 2. Of these, changes to flows will be the most significant. According to Appendix 4B, the proposed flows in the lower Yuba River are

supposed to vary no more than +/- 5 percent during most months of all water year types. Exceedance is also not substantially different, while average water temperatures are different by less than 0.5°F, except in May and June, when they may rise by 0.5 to 1°F.

Additional information on their status is included in the significance findings and based on documented occurrences within the area.[14]

The Proposed YRDP's O&M activities have the potential to impact special-status species. Chapter 2, Project Description, describes Proposed YRDP, including flow modifications, implementation of new license measures and management plans, and O&M of both current, modified, and new YRDP facilities.

The Proposed YRDP's measures and management plans developed in conjunction with resource agencies, discussed in Section 2.5.1.5 of Chapter 2 and the results of consultation with the USFWS, discussed in Section 2.5.1.10.1 of Chapter 2, contain a mixture of provisions that provide protection to special-status species during Proposed YRDP O&M. Some of these protections are specific to certain species, while others cover all or a subset of special-status species that may occur in or near construction work sites. Measures to protect or mitigate special-status species in measures and management plans, as well as from the consultation with the USFWS, are described in PP-2, but also include a USFWS protection measure for valley elderberry longhorn beetle to conduct surveys for elderberry plants within 165 feet of an activity area and consult with USFWS if elderberry plants areas are found in order to determine if additional protective measures are necessary.

Special-status species are further discussed below, in three groups: (1) those species listed or proposed under the federal ESA; (2) those species listed or proposed under the CESA or as a State FP; and (3) all other special-status species, including those listed by the CDFW as SSC.

Federal Threatened and Endangered Species

Monarch butterfly, FPT. There is suitable foraging habitat for the monarch butterfly within the YRDP boundary. Monarchs require their host plant, milkweed, to be present to reproduce, which was not located in the YRDP boundary below Englebright. Monarch overwintering similarly does not occur. Therefore, monarch presence is only expected to occur during temporary foraging and nectaring visits. O&M activities that may affect monarch butterfly include removal of foraging habitat and injury to/disturbance of individuals that may be traveling through or foraging in the area during vegetation management and maintenance of Project facilities. FERC's FEIS (2019) stated that "…Project-related activities such as…routine Project road and facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project…" (page 3-281). The FEIS (FERC 2019) also determined that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283). In particular, the Integrated Vegetation Management Plan's requirements for BMPs to prevent the introduction of invasive plants and revegetation will prevent loss of monarch butterfly foraging habitat during Proposed YRDP O&M.

[14] The species below were included to complete a comprehensive assessment of potentially occurring species; however, their inclusion does not necessarily constitute presence.

Yuba Water employees will also be familiar with the species, due to the annual training (GEN3). The requirement to drive on existing roads only (LU1) will also prevent damage to foraging habitat Yuba Water and their contractors' vehicles and equipment.

The Proposed YRDP's O&M is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including monarch butterfly, during Proposed YRDP activities. Therefore, Proposed YRDP operations on monarch butterfly would be less than significant.

Valley elderberry longhorn beetle (Desmocerus californicus dimorphus), FT. Valley elderberry longhorn beetle is dependent on elderberry plants to serve as a host for the beetle's life cycle. Within the YRDP boundary, there is one known blue elderberry shrub present, at the Narrows 2 Powerhouse, that may be capable of sustaining valley elderberry longhorn beetle. However, the elderberry shrub exhibited no evidence of beetle presence, and there are no known occurrences of valley elderberry longhorn beetle within 5 miles of the YRDP.

If proper BMPs are not followed during vegetation management activities, elderberry plants and valley elderberry longhorn beetles may be damaged due to habitat removal or damage, and dust. The YRDP *Integrated Vegetation Management Plan*, which will apply to the boundary at Narrows 2 Powerhouse, includes specific provisions surrounding valley elderberry longhorn beetle such as "…avoidance and minimization measures for sensitive areas, which include the location of the known elderberry shrub" (page 3-340). Some of these measures include "…conducting pre-construction surveys for elderberry plants and beetles, implementing buffers around elderberry plants, flagging or fencing potential habitat, emphasizing manual over chemical vegetation management, instituting limited operating periods, and following BMPs such as those provided by Forest Service" (page 3-340).

The FERC FEIS (2019), which covers the Narrows 2 development, stated that "…damage to elderberry plants resulting from Project…maintenance activities could affect valley elderberry longhorn beetles, which use the plants for reproduction. The staff-recommended additional surveys for elderberry plants prior to activities that result in vegetation disturbance would help protect this plant from Project-related activities. Therefore, relicensing the Project…is not likely to adversely affect the valley elderberry longhorn beetle." (page xlii).

The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including valley elderberry longhorn beetle, during Proposed YRDP activities. Therefore, Proposed YRDP operations on valley elderberry longhorn beetle would be less than significant.

Northwestern pond turtle, FPT. There are four occurrences of northwestern pond turtle within the corridor along the Yuba River below Englebright dam prior to the confluence with the Feather River (CDFW 2025a), and the river corridor provides habitat to northwestern pond turtle along its entire length, provided there are places suitable for basking. Most of the proposed boundary of the Narrows 2 development of the YRDP are too high above the Yuba River and/or too steep for northwestern pond turtle to access. There have been no observations of the species in the Proposed Projects Boundaries.

FERC's 2019 FEIS stated that YRDP "…Project-related activities such as…routine Project road and facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project" (page 3-281). However, the 2019 FEIS concluded that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283).

As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures. Per Appendix 4B, proposed flows in the lower Yuba River are projected to vary marginally versus current flows, and temperatures will also increase by up to 1°F in May and June but otherwise differ by less than 0.5°F throughout the year.

The Proposed YRDP also includes measures and plans that will prevent or limit potential impacts to northwestern pond turtles. Yuba Water employees will also be familiar with the species and its habitat, due to the annual training (GEN3). The requirement to drive on existing roads only (LU1) will also prevent damage to nesting habitat by Yuba Water and their contractors' vehicles and equipment. The Integrated Vegetation Management Plan's requires that if any northwestern pond turtle nesting sites are identified, coordination with agencies will be required to develop protection measures. Additionally, Yuba Water will monitor northwestern pond turtles in the upper Yuba River under the Proposed Upper Yuba River Monitoring Plan (AR7), which will provide the opportunity to consult with agencies about additional protective measures should there be a noticeable decline in the northwestern pond turtle.

Proposed O&M activities at the Proposed Projects facilities would have minimal impact on northwestern pond turtles, due to limited accessible habitat and small areas of Proposed YRDP activities. Northwestern pond turtles would also not be anticipated to benefit or be negatively affected by the limited changes to the lower Yuba River flows and temperatures under the Proposed YRDP. Additionally, new measures and plans will provide protections for northwestern pond turtles during Proposed YRDP operations. Overall, impacts on northwestern pond turtles would be less than significant.

State Threatened, Endangered and Fully Protected Species

A total of seven species listed or candidate under the state ESA and/or as a state FP are known or have the potential to occur in the Proposed Projects Boundary and/or be impacted by Projects operation:

Foothill yellow-legged frog, ST. The Yuba River downstream of Englebright dam is below 600 feet in elevation and, thus, outside the known or expected distribution of FYLF, which extends from about 600 feet to 5,000 feet in elevation (Moyle 1973, Seltenrich and Pool 2002, ECORP Consulting, Inc. 2005). While FYLF occurring below Englebright Dam is unlikely, individuals were sighted in 2002 at Shubert Creek, approximately 0.4-mile upstream of the confluence with the Yuba River and 1 mile west of Englebright. An additional observation was made in 2016 at the confluence of Deer Creek and the Yuba River.

FYLF requires shallow, reduced flow streams and rivers to reproduce and ensure their egg masses remain attached to riverbed substrates. FYLF is not expected to inhabit the stretch of river directly below the dam due to the intense flow regime, which is not conducive to successful frog reproduction.

FYLF has potential habitat below Englebright Dam on the tributaries that feed into the Yuba River and have been observed on Shubert Creek and Deer Creek over the past 20 years. However, the Yuba River flows too fast and is too deep below Englebright Dam to be suitable habitat for the species. No occurrences have been recorded along the Yuba River, nor would any be expected. In addition, the Narrows Hydro FLA analyzed the impacts of relicensing on California red-legged frog habitat within the Yuba River, below Englebright Dam. The FLA concluded that there was a "…lack of appropriate aquatic habitat for this species (i.e., the Yuba River is too deep and fast, as well as lacking in vegetative cover, in and around the FERC Project Boundary) and the steepness and inaccessibility of the slopes prevent any upland access…" (page E-57) (YCWA 2023). While this analysis is not specifically intended to address FYLF, the findings are applicable across species to identify the lack of suitable shallow, slowly flowing water directly below Englebright Dam.

As described in Appendix 4B, the anticipated flows and temperature changes from the Proposed YRDP would be unlikely to affect the habitat where FYFL have been located.

Since FYLF are not expected along the lower Yuba River, and Proposed YRDP activities would not be anticipated to affect the tributaries which do constitute habitat/have known occurrences, the YRDP operations below Englebright Dam would have less than significant impacts to FYLF.

Golden eagle, BGEPA, FP. Golden eagle has suitable habitat surrounding the Narrows 2 Project facilities. Large bodies of water are common migratory sites for golden eagle and are used as a crucial food source. Englebright Reservoir has known occurrences of golden eagle from 2022; however, the species is not known to nest in the area and assumed to be a transient visitor. The Proposed Projects could impact golden eagle during vegetation management by way habitat loss (foraging), and/or flushing of individuals utilizing the area.

The FERC's 2019 FEIS addresses impacts to golden eagles, determining that they are "…nonresident visitors to the Project Area…" and "…no information suggests that Project dams, powerhouses, or operation and maintenance activities negatively affect [them]" (page 3-292). Additionally, there is a *de minimus* area of potential golden eagle foraging habitat subject to impact, since most of the YRDP's footprint is developed at the Narrows 2 Development.

Since golden eagles do not nest at the Proposed YRDP, impacts to the species from operations would be limited to removal/damage of roosting and foraging habitat and disturbance of individuals that may be traveling through, roosting or foraging in the area during operations activities may affect golden eagles. Therefore, impacts to golden eagle by Proposed YRDP operations downstream of Englebright Dam would be less than significant.

Burrowing owl (Athene cunicularia), SC. There is suitable habitat for burrowing owl within the Proposed YRDP boundary at the Narrows 2 Development. There are no known occurrences within 5 miles of the YRDP. The YRDP could impact burrowing owls during vegetation management by

way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area.

The FERC's FEIS (2019) does not describe burrowing owl impacts in depth due to their lack of occurrences. However, the FEIS states that YRDP activities including "…vegetation management could also affect habitat for nesting birds by creating noise and potentially removing nests…timing restrictions included in the *Integrated Vegetation Management Plan* and *Bald Eagle and American Peregrine Falcon Management Plan* would provide protection for nesting migratory birds and raptors by ensuring that vegetation management does not occur during important life stages for these species…" (page xl) (FERC 2019). Additionally, since the majority of the Narrows 2 Development is developed area, there is a *de minimus* amount of burrowing owl habitat subject to disturbance.

The Proposed YRDP also contains other measures and plans which will provide protections to burrowing owls, including annual environmental training for Yuba Water employees (GEN3), and a Transportation Management Plan (LU1) that includes LOPs for nesting birds (including burrowing owls).

Proposed O&M activities at the Proposed Projects facilities would have minimal impact on burrowing owls, due to limited nesting habitat, small areas of Proposed YRDP activities and lack of known occurrences. Additionally, new measures and plans will further protect burrowing owls during Proposed YRDP operations. Therefore, the YRDP operation impacts on burrowing owl downstream of Englebright Dam would be less than significant.

White-tailed kite (Elanus leucurus), FP. White-tailed kite has suitable habitat within the Proposed YRDP boundary, and there is a known occurrence approximately a mile downstream of Narrows 2 Powerhouse on the Yuba River (CDFW 2025a). White-tailed kite is known to forage in open grasslands and barren ground; habitats which are present within the YRDP boundary. Project O&M at the Narrows 2 Development could impact white-tailed kite during vegetation management by way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area.

The FERC's FEIS does not describe white-tailed kite impacts in depth, but the FEIS (2019) generally states that YRDP activities including "…vegetation management could also affect habitat for nesting birds by creating noise and potentially removing nests…" (page x1). For the YRDP, the "…*Integrated Vegetation Management Plan* and *Bald Eagle and American Peregrine Falcon Management Plan* would provide protection for nesting migratory birds and raptors by ensuring that vegetation management does not occur during important life stages for these species…" (page xl). Since the majority of Narrows 2 Development is developed area, there is a *de minimus* amount of white-tailed kite habitat subject to disturbance.

The Proposed YRDP also contains other measures and plans which will provide protections to white-tailed kites, including annual environmental training for Yuba Water employees (GEN3), and a Transportation Management Plan (LU1) that includes LOPs for nesting birds (including white-tailed kites).

Proposed O&M activities at the Proposed Projects facilities would have minimal impact on white-tailed kites, due to limited habitat, and small areas of Proposed YRDP activities. Additionally, new measures and plans will further protect white-tailed kite during Proposed YRDP operations. Given protective measures and the small amount of habitat, the YRDP operation impacts to white-tailed kite downstream of Englebright Dam would be less than significant.

Bald eagle, BGEPA, SE, FP. Bald eagle has suitable habitat surrounding the lower Yuba River's YRDP facilities. Large bodies of water are common migratory, hunting, and roosting sites for bald eagles and are used as a crucial food source. Englebright reservoir has known occurrences of bald eagle from 2022 ornithological studies; however, the species is not known to nest and would be a transient visitor to the YRDP facilities below Englebright. Additionally, there is a *de minimus* area of potential bald eagle foraging habitat subject to impact, since most of the YRDP's footprint is developed at the Narrows 2 Development.

Since bald eagle would not be expected to forage or nest at the Narrows 2 Development facilities, impacts to the species would be limited to flushing individuals temporarily roosting or passing through the YRDP. Therefore, the YRDP operation impacts to bald eagles downstream of Englebright Dam would be less than significant.

California black rail (Laterallus jamaicensis coturniculus), ST, FP. There are multiple occurrences of California black rail documented downstream of the YRDP facilities, using saline, brackish, and freshwater emergent wetlands inland of the Yuba River (CDFW 2025a). No nesting or foraging habitat is present within the Proposed YRDP boundary. Due to the lack of suitable long-term habitat within the YRDP boundary, this species is expected to be a transient visitor to the area.

Since California black rail would not be expected to forage or nest at YRDP facilities (nor be affected by proposed flows), impacts to the species would be limited to flushing individuals temporarily roosting or passing through the YRDP. Therefore, the YRDP operation impacts to California black rail downstream of Englebright Dam would be less than significant.

Ringtail, FP. Occurrences of ringtail have been documented within the YRDP boundary, namely at the Narrows 2 Powerhouse and Switchyard. Ringtails are known to be attracted to human activity, especially when sources of food are accessible. This greatly increases the chances of direct interactions with humans and the potential for impacts to ringtail within the Proposed YRDP. Ringtail may be impacted by way of injury or death due to interaction with facility equipment, entrapment in the powerhouse, habitat loss due to vegetation management and/or flushing during use of the YRDP area.

The YRDP includes a *Ringtail Management Plan*, described above, and the FEIS determined that "…measures outlined in the *Ringtail Management Plan* should be adequate to protect ringtail in the Project Area for the term of the new license…" (page 3-285). Specifically, the Plan aims to keep ringtails out of Project facilities and away from electrocution hazards. GEN3, which is also detailed in the Plan, will provide Yuba Water personnel with information on ringtails and their known occurrences, as well as measures for their protection. These combined protective measures will reduce interactions with humans and YRDP vehicles and equipment.

Ringtails are listed as FP and take of the species is prohibited except when authorized in specific circumstances, rendering any impact to ringtails that may be considered take as potentially significant. However, the Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status species, including ringtail, during Proposed YRDP activities. Therefore, Proposed YRDP operations impacts on ringtail above Englebright would be less than significant**.**

Other Special-Status Species

Special-status plants. There are five special-status plant species with the potential to occur within the YRDP boundary below Englebright, though none have been identified within 5 miles of the YRDP. Project O&M, such as vegetation management, has the potential to impact special-status plants within the YRDP boundary by way of compaction, trampling, and removal of habitat. Per the 2019 FEIS, "…adverse effects from Project operation and maintenance on special-status plants would be minor because they would affect a small number of occurrences…" (page 3-271) (FERC 2019). Additionally, the YRDP does not have much potential to impact special-status plants, due to a lack of opportunity for new occurrences of special-status plants (due to limited habitat types) and small areas of Proposed Projects O&M activities.

The main protective measures for special-status plants are located in TR1, which requires Yuba Water to survey for special-status plant occurrences on the Proposed YRDP and consult with resource agencies on protective measures before conducting vegetation management near occurrences. Additionally, TR1 contains provisions for the prevention and management of invasive plants, which can outcompete native plants and otherwise degrade habitat. Areas of temporary disturbance and where invasive plants have been removed are required to be revegetated, which will prevent the loss of and improve habitats that can be utilized by special-status plants. LU1 requires vehicles to stay on designated roads and access routes, which reduces damage to habitat and introduction of invasive plant species from tires. GEN3, which provides employee training, will inform Yuba Water personnel on special-status plants, their known occurrence locations and measures to protect them during YRDP operations.

The Proposed YRDP's operations is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status plant species during Proposed YRDP activities. Therefore, Proposed YRDP operations impacts on special-status plants above Englebright would less than significant.

Southern long-toed salamander (Ambystoma macrodactylum sigillatum), SSC. There is suitable habitat for southern long-toed salamander within the YRDP boundary. However, there are no known occurrences of the species within 5 miles of the YRDP. This species can be found in grasslands, dry woodlands, and brush habitats.

The FERC's FEIS (2019) does not specifically discuss southern long-toed salamander, but the FEIS does state, "…Project-related activities such as vegetation maintenance (e.g., tree trimming or removal)…routine Project…facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals

and their long-term occupancy of areas within and adjacent to the Project…" (page 3-281). Some habitat may also be removed or damaged during vegetation management, though most management occurs in already disturbed areas. Other areas may be damaged or degraded due to dust, the introduction of invasive species or operation of vehicles or trampling by Yuba Water personnel.

For the Narrows 2 development, Yuba Water would implement proposed protection, mitigation, and enhancement measures that would "…protect sensitive species…" (FERC 2019). As described above, these would include LU1, which would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Revegetation of temporarily disturbed areas and sites cleared of invasive plants will prevent the loss of habitat and improve degraded areas. Additionally, GEN3 will provide Yuba Water employees with training on southern long-toed salamander and any known occurrences, as well as the measures to protect them.

Given the lack of occurrences, protective measures in the license for the Narrows 2 development and small area of O&M, potential impacts of the YRDP's operations on southern long-toed salamander would be less than significant.

Coast horned lizard, SSC. There is suitable habitat (scrub, grassland, and chaparral habitats) for the coast horned lizard within the YRDP's boundary below Englebright. However, there are no known occurrences of the species within 5 miles of the YRDP below Englebright.

The FERC's FEIS (2019) does not specifically discuss coast horned lizard, but the FEIS does state, "…Project-related activities such as vegetation maintenance (e.g., tree trimming or removal)…routine Project…facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project…" (page 3-281). Proposed Project operations may collapse burrows used by coast horned lizard, potentially killing or injuring lizards, along with destroying the habitat.

For the Narrows 2 development, Yuba Water would implement proposed protection, mitigation, and enhancement measures that would "…protect sensitive species…" (FERC 2019). As described above, these would include LU1, which would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Revegetation of temporarily disturbed areas and sites cleared of invasive plants will prevent the loss of habitat and improve degraded areas. Additionally, GEN3 will provide Yuba Water employees with training on southern long-toed salamander and any known occurrences, as well as the measures to protect them.

Given the lack of occurrences, protective measures in the Proposed YRDP license for the Narrows 2 development, and the small area of O&M, impacts of the YRDP's operations on coast horned lizard downstream of Englebright Dam would be less than significant.

Special-status raptors. There is potential habitat for other special-status raptors, such as short-eared owl (*Asio flammeus*), long-eared owl, and northern harrier, within the YRDP boundary below Englebright. However, none of these species are known to occur below Englebright Dam or within 5 miles of the YRDP. Short-eared owls and northern harriers have potential nesting habitat within the grasslands present, and long-eared owls have potential nesting habitat within the oak woodland habitat. However, there has been no sighting of nesting or transient individuals of any of these species. The YRDP could impact special-status raptors during vegetation management by way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area. However, since most of the Narrows 2 Development is developed, there is a *de minimis* amount of special-status raptors habitat subject to disturbance.

The FERC's FEIS (2019) does not describe special-status raptors impacts in depth, but the FEIS generally states that YRDP activities including "…vegetation management could also affect habitat for nesting birds by creating noise and potentially removing nests…" (page x1). For the YRDP, the "…*Integrated Vegetation Management Plan* and *Bald Eagle and American Peregrine Falcon Management Plan* would provide protection for nesting migratory birds and raptors by ensuring that vegetation management does not occur during important life stages for these species…" (page xl).

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status raptors during Proposed YRDP activities. Therefore, Proposed YRDP operations on special-status raptors downstream of Englebright Dam would less than significant.

Other special-status and migratory birds. There is suitable habitat (woodlands) for three special-status and many migratory birds within or near the YRDP below Englebright. None of the special-status birds have been observed within 5 miles of the YRDP below Englebright. All three would be transient through the area. The YRDP could impact special-status and migratory birds during vegetation management by way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area. Since most of the Narrows 2 Development is developed, there is a *de minimis* amount of special-status raptors habitat subject to disturbance.

The FERC's 2019 FEIS does not describe special-status and migratory birds impacts in depth, but the FEIS generally states that YRDP activities including "…vegetation management could also affect habitat for nesting birds by creating noise and potentially removing nests…" (page x1). For the YRDP, the "…*Integrated Vegetation Management Plan* and *Bald Eagle and American Peregrine Falcon Management Plan* would provide protection for special-status and migratory birds by ensuring that vegetation management does not occur during important life stages for these species…" (page xl). Additional measures and plans also provide protection for nesting birds, including GS3, which requires an LOP and nest buffer for raptors during wood management. TR1 also requires LOP and nesting buffers for raptors, in these cases, for road maintenance and vegetation management, and GEN3, which requires Yuba Water employees to take an annual training, will provide information about special-status raptors, their known occurrences, and measures to protect them.

The Proposed YRDP's operations, outside of flows, is not anticipated to change significantly from current conditions. The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status and migratory birds during Proposed YRDP activities. Therefore, Proposed YRDP operations on special-status and migratory birds above Englebright would less than significant.

Special-status bats. There are five known species of special-status bats- pallid bat, Western mastiff bat (*Eumops perotis californicus*), Townsend's big-eared bat, spotted bat (*Euderma maculatum*), and Western red bat in the area of the YRDP below Englebright. Townsend's big-eared bat and spotted bat were observed at YRDP's Narrows 2 Development.

The FEIS (FERC 2019) analyzed potential impacts to special-status bats for the YRDP, including the Narrows 2 development. Per the FEIS, "…bats are sensitive to anthropogenic impacts, both as a direct result of human presence and indirect effects from disturbances to their roosts and surrounding habitat. Loss of roost habitat can be particularly harmful to bats since they use roosts during sensitive life-history periods, including the maternity season and winter hibernating, and many roosts are used by successive generations of bats over many years. Disturbance to maternity colonies can cause bats to abandon young, and effects on maternity colonies can decrease the fecundity of individuals and populations as well as subsequent generations of bats. If disturbed during hibernation, bats may awake prematurely, which can cause an elevation in body temperatures and promote the use of stored energy reserves, leaving insufficient energy to survive the rest of the winter. Changes in the microclimate of roosts from the removal of trees and other habitat degradation and alterations can make roosts unsuitable and contribute to a loss of roost habitat. Implementation of measures to protect roosting bats, especially during the maternity and winter hibernating seasons when bats are most sensitive to disturbance, is important when managing bat populations in a given area because of their low reproductive rate and roost site fidelity…" (page 3-286). Additionally, bat roosts or nurseries in YRDP facilities also increase the possibility for interactions that result in negative impacts to bats, as well as potential disease transmission to humans. White-nose syndrome, a fungus which is often lethal to bats, can also be carried by humans on clothing and equipment that has been in a contaminated area and not properly decontaminated before moving into areas free of the fungus.

The Narrows 2 development will have specific measures in place in order to protect special-status bats. YRDP includes a *Bat Management Plan* which includes, "…measures to protect bats roosting at Project structures (e.g., powerhouses, storage buildings, valve houses, and dams), recreation facilities, or other structures where Project staff have a routine presence. Protection measures for bats in the plan include exclusion and protection measures and surveys to ensure these measures are effective…" (page 3-286). This Plan requires surveys of facilities where bats may be present to determine presence and erect humane exclusionary devices. This reduces the possibility of human and bat interactions, including the spread of the fungus that causes white nose syndrome. GEN3, which requires Yuba Water employees to take an annual training, will provide information about special-status bats, their known occurrences, and measures to protect them.

The implementation of the described measures and plans are anticipated to provide new and improved protections for special-status bats during Proposed YRDP activities. Therefore, Proposed YRDP operations on special-status bats downstream of Englebright would be less than significant.

American badger, SSC. There is suitable habitat (open spaces with little groundcover) for the American badger within the YRDP below Englebright. However, there are no known occurrences of this species within 5 miles of YRDP below Englebright.

The FERC's FEIS (2019) does not specifically discuss American badger, but the FEIS does state, "…Project-related activities such as vegetation maintenance (e.g., tree trimming or removal)…routine Project…facility maintenance…have the potential to disturb and/or displace wildlife and damage or destroy their habitat, thus reducing the reproductive output of individuals and their long-term occupancy of areas within and adjacent to the Project…" (page 3-281). Vegetation management is the main Proposed YRDP activity that might cause impacts to American badger. American badgers may also be struck and injured or killed by Proposed YRDP road use. Flow changes are not anticipated to impact American badgers, since their habitat is not linked to the reservoirs or affected reaches.

The FEIS (FERC 2019) also determined that "…implementation of YCWA's proposed protection, mitigation, and enhancement measures would protect sensitive species…" (page 3-283). As described above, these would include LU1, which would keep vehicles and construction equipment on designated roads and access routes, keeping them from damaging or destroying habitat, as well as reducing the potential for introduction of invasive species that can also degrade habitat. Additionally, GEN3 will provide Yuba Water employees with training on American badger, as well as measures to protect them.

Given the lack of occurrences, protective measures in the license for the Narrows 2 development, and the small area of Proposed YRDP O&M in undeveloped areas, impacts of the Proposed YRDP's operations on American badger downstream of Englebright Dam would be less than significant.

CEQA Conclusion

Outside of flows (discussed below), the Proposed YRDP's operations are similar to those under existing conditions. Operations for the Proposed YRDP downstream of Englebright Dam could impact special-status species through combined direct and non-flow-related indirect impacts, including by death or injury to individuals from vehicle or equipment strikes or trampling by Yuba Water personnel, habitat loss or degradation (including through introduction of invasive species), permanent or temporary disturbance caused by Proposed YRDP operations (e.g., noise, dust, vibrations, etc.). However, the Proposed YRDP's measures and management plans include provisions for protecting special-status species specifically during O&M activities, as detailed above, which will ensure the impacts of these activities on all known or potential species are less than significant.

In addition, per Appendix 4B, changes to lower Yuba River flows and temperatures will be relatively minor under the Proposed YRDP. Those changes would not change the flows or temperature of the habitats utilized by northwestern pond turtles or FYLF, the only two special-status species who may be impacted by flow and temperature changes in a way to either cause them harm or benefit.

Therefore, under the Proposed YRDP, impacts to special-status species from operations downstream of Englebright Dam would be **less than significant.**

YRDP Impact BIO-PP-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Flow changes under the Proposed YRDP in the lower Yuba River would maintain or enhance existing riparian vegetation by mimicking the natural hydrograph more closely and providing better conditions under which new riparian vegetation could become established resulting in a beneficial impact.

No other sensitive natural communities would be impacted as these communities do not occur in the Project area downstream of Englebright Dam.

CEQA Conclusion

YRDP O&M would continue at the existing facilities as described in Chapter 2. Anticipated flow changes to the lower Yuba River from the Proposed YRDP would have a **beneficial** impact to riparian habitat as it would enhance the natural hydrograph to support an increase in riparian habitat.

YRDP Impact BIO-PP-11: Operations Impacts on Wildlife Movement Corridors

The area of the Narrows 2 development is just above a Natural Landscape Block and shown as reasonably permeable for wildlife.

YRDP O&M would continue at the existing facilities as described in Chapter 2.

The addition of non-native invasive plant management, restoration/revegetation of disturbed areas; and additional protections for sensitive resources in the Proposed YRDP measures and plans described above are the only other pieces of the Proposed YRDP that could impact wildlife movement. Of these, only the removal of non-native invasive plants and revegetation of disturbed areas may impact wildlife movement through improvement of natural habitats, but not enough to increase the permeability of wildlife movement corridors.

The flow changes under the Proposed YRDP in the lower Yuba River would vary no more than +/- 5 percent from current flows. This would not increase or decrease flows at any point such that they would affect the ability of wildlife species to move, nor alter any of the physical characteristics of the Proposed YRDP or affected stream reaches to substantively improve or limit wildlife movement.

CEQA Conclusion

As described, the flow changes would not be anticipated to change the velocity of the river, nor the landforms along or in the river, substantively enough to either improve or impede the ability of wildlife to traverse the area. The removal of non-native invasive plants and revegetation of disturbed areas may impact wildlife movement through improvement of natural habitats, but not enough to increase the permeability of wildlife movement corridors. Under the Proposed YRDP

downstream of Englebright Dam, direct and indirect impacts from operations to movement or wildlife species, migratory corridors and use of wildlife nursery sites would be **less than significant**.

YRDP Impact BIO-PP-12: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The area of the Proposed YRDP operations downstream of Englebright Dam, is all within Yuba County. The Yuba County General Plan (2011) includes protections such as preservation of native vegetation to the extent possible (NR5.4), avoid loss of jurisdictional wetlands (NR5.9), avoid placing barriers to wildlife movement (NR5.13), and preserve existing oak trees that have a diameter at breast height of 6 inches or greater and all other trees of a diameter at breast height of 30 inches or greater (NR10.1). None of the identified policies or ordinances within Yuba County addressed river flows or temperatures as they relate to biological resources and their protection.

CEQA Conclusion

Per discussion above, the Proposed YRDP operations will have a beneficial impact on sensitive habitats (YRDP Impact BIO-PP-9), no impacts on wetlands, and less than significant impacts on wildlife movement (YRDP Impact BIO-PP-11). Additionally, vegetation management will remain essentially the same as under existing conditions, so no new areas of vegetation, including large trees, are proposed for removal under the Proposed YRDP operations.

For the remaining potential conflicts with local policies and ordinances, the Proposed YRDP has measures and plans that will address their requirements, including implementing a Transportation Management Plan that implements LOPs for special-status wildlife, as well as invasives species preventions provisions; an Integrated Vegetation Management Plan with BMPs for the prevention of introduction and spread of invasive plant species, revegetation of temporarily disturbed or otherwise cleared areas, surveys for special-status plants every 10 years, consultation with agencies for vegetation activities in special-status plant occurrences and protections for nesting birds, FYLF and northwestern pond turtles; a Bald Eagle and American Peregrine Falcon Management Plan that establishes LOPs and nest buffers for both species, as well as incidentally located raptor nests; a Ringtail Management Plan to prevent ringtail encounters with people and electrocutions; and a Bat Management Plan to limit interactions with humans and the spread of white-nose syndrome.

Therefore, under the Proposed YRDP above Englebright Dam, conflicts to local policies and ordinances by Proposed YRDP operations would be **less than significant**.

Narrows Impact BIO-PP-1: Operations Impacts on Special-Status Species

Based on the results of the literature review, past surveys, relicensing studies, and other available data, numerous special-status species are known to occur or have the potential to occur within the Proposed Narrows Boundary (see Appendix 10E). The species or species groups identified below were determined to have the potential to occur in areas of Proposed Narrows operations below Englebright Dam and/or along the lower Yuba River. Additional information on their status within the Projects Area are included in the significance findings and based on documented occurrences within the area.[15]

Proposed Narrows operations include a measure that will require coordinate operations and provide flows to the lower Yuba River and provide up to 730 cfs to assist YRDP meet minimum flow requirements. Additionally, a second measure requires that Narrows operations shall not result in a rate of change in streamflow greater than flow fluctuation limits required at USGS gage station 11418000. Therefore, although the Proposed Narrows operations do not themselves change the flows on the lower Yuba River, they will contribute to YRDP proposed flows. Due to habitat requirements, only northwestern pond turtles and FYLF may be impacted by changes in flow and water temperatures.

Special-status species are further discussed below, in three groups: (1) those species listed or proposed under the federal ESA; (2) those species listed or proposed on the CESA or as a State FP; and (3) all other special-status species, including those listed by the CDFW as SSC, and the BLM as BLM-S.

Federal Threatened and Endangered Species

A total of three species listed, proposed or candidate as threatened or endangered under the federal ESA are known or have the potential to occur in the Proposed Narrows Boundary and/or be impacted by Proposed Narrows operation:

Monarch butterfly, FPT. There is suitable foraging habitat for the monarch butterfly within the Proposed Narrows Boundary. Monarchs require their host plant, milkweed, to be present to reproduce, which was not located in the Proposed Narrows Boundary. Monarch overwintering similarly does not occur. Therefore, monarch presence is only expected to occur during temporary foraging and nectaring visits.

Proposed Narrows O&M activities are limited to as needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management and the occasional removal of hazard trees. There is also a *de minimus* area of habitat that might be utilized by monarch butterfly that would overlap with Proposed Narrows operations, since activities are limited to already disturbed areas of the Narrows Project and no new areas of operations are proposed.

[15] The species below were included to complete a comprehensive assessment of potentially occurring species; however, their inclusion does not necessarily constitute presence.

Given the small area of overlap with Proposed Narrows operations and monarch habitat, as well as the infrequency of those operations activities, the impacts of the Proposed Narrows operations on monarch butterflies would be less than significant.

Valley elderberry longhorn beetle (Desmocerus californicus dimorphus), FT. Valley elderberry longhorn beetle is dependent on elderberry plants to serve as a host for the beetle's life cycle. Within the Proposed Narrows boundary, there are no known elderberry shrubs present, and there are no known occurrences of valley elderberry longhorn beetle within 5 miles of the Narrows Project.

Since no elderberry habitat is present on the Proposed Narrows, there will be no impact on valley elderberry longhorn beetle.

Northwestern pond turtle, FPT. There are four occurrences of northwestern pond turtle within the corridor along the Yuba River below Englebright dam prior to the confluence with the Feather River (CDFW 2025a), and the river corridor provides habitat to northwestern pond turtle along its entire length, provided there are places suitable for basking. The majority of the proposed boundary of the Narrows Project is too high above the Yuba River and/or too steep for northwestern pond turtle to access. There have been no observations of the species in the Proposed Narrows Boundary.

Proposed project O&M activities are also limited to as-needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management, and the occasional removal of hazard trees. These are already disturbed locations associated with the Narrows Project, and no new areas are proposed. Wildlife would be anticipated to utilize these already disturbed areas less frequently and to be more adapted to Narrows Project activities.

As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures. Per Appendix 4B, proposed flows in the lower Yuba River are projected to vary marginally versus current flows, and temperatures will also increase by up to 1°F in May and June but otherwise differ by less than 0.5°F throughout the year.

Northwestern pond turtles would not be anticipated to benefit or be negatively affected by the limited changes to the lower Yuba River flows and temperatures under the Proposed Narrows contribution to flows. Proposed O&M activities at the Proposed Narrows facilities would have less than significant impact on northwestern pond turtles, due to limited accessible habitat and small, already disturbed areas of Proposed Narrows activities.

State Threatened, Endangered and Fully Protected Species

A total of seven species listed or candidate under the state ESA and/or as a state FP are known or have the potential to occur in the Proposed Narrows Boundary and/or be impacted by Proposed Narrows operations:

Foothill yellow-legged frog, ST. FYLF has been reported in tributaries to the lower Yuba River but is not know from the mainstem of the river. As described in Appendix 4B, the anticipated flows

and temperature changes from the proposed flows in the lower Yuba River would be unlikely to affect the habitat where FYFL have been located.

FYLF would not be anticipated to benefit or be negatively affect by the limited changes to the lower Yuba River flows and temperatures under the under the Proposed Narrows contribution to flows. Therefore, there would be less than significant impacts to FYLF.

Golden eagle, BGEPA, FP. Golden eagle has suitable habitat surrounding the lower Yuba River Proposed Projects' facilities. Large bodies of water are common migratory sites for golden eagle and are used as a crucial food source. Englebright Reservoir has known occurrences of golden eagle from 2022; however, the species is not known to nest in the area and assumed to be a transient visitor. The Proposed Narrows could impact golden eagle during vegetation management by way habitat loss (foraging), and/or flushing of individuals utilizing the area.

The FERC's 2019 FEIS addresses impacts to golden eagles, determining that they are "…nonresident visitors to the Project Area…" and "…no information suggests that Project dams, powerhouses, or operation and maintenance activities negatively affect [them]" (page 3-292). This applies to activities at the Narrows Project, as well, due to similar O&M activities and close geographic proximity. Additionally, there is a *de minimus* area of potential golden eagle foraging habitat subject to impact, since most of the Proposed Narrows' footprint is developed, especially in areas of proposed operations.

Therefore, impacts to golden eagle by Proposed Narrows operations downstream of Englebright Dam would be less than significant.

Burrowing owl (Athene cunicularia), SC. The steep slopes of the Narrows Project prevent the use of the area for burrowing owl nesting. There are no known occurrences within 5 miles of the Proposed Narrows. The Proposed Narrows could impact burrowing owls during vegetation management by way of habitat loss (foraging), and/or flushing of individuals utilizing the area.

The Narrows FLA does not describe burrowing owl impacts in depth due to their lack of occurrences and habitat at the Narrows Project. The Narrows Project does not contain nesting habitat and there is a *de minimus* amount of burrowing owl foraging habitat subject to disturbance. Therefore, the Proposed Narrows operation impacts on burrowing owl would be less than significant.

White-tailed kite (Elanus leucurus), FP. White-tailed kite has suitable habitat within the Proposed Narrows boundary, and there is a known occurrence approximately a mile downstream of Narrows 2 Powerhouse on the Yuba River (CDFW 2025a). White-tailed kite is known to forage in open grasslands and barren ground; habitats which are present within the Narrows Boundary. The Proposed Narrows could impact white-tailed kite during vegetation management by way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area.

Neither the FERC's FEIS nor the Narrows FLA describe white-tailed kite impacts in depth, but the FEIS (2019) generally states that activities including "…vegetation management could also affect habitat for nesting birds by creating noise and potentially removing nests…" (page x1),

which would apply to the Narrows Project, as well, due to similar activities, as well as geographic proximity.

At the Proposed Narrows Project, Yuba Water would follow laws and regulations for the protection of nesting birds, including white-tailed kite, to prevent the removal or failure of nests. Additionally, since the majority of the Narrows Project is developed area, there is a *de minimus* amount of white-tailed kite habitat subject to disturbance. Therefore, the Proposed Narrows operation impacts to white-tailed kite downstream of Englebright Dam would be less than significant.

Bald eagle, BGEPA, SE, FP. Bald eagle has suitable habitat surrounding the lower Yuba River facilities. Large bodies of water are common migratory, hunting, and roosting sites for bald eagles and are used as a crucial food source. Englebright reservoir has known occurrences of bald eagle from 2022 ornithological studies, however the species is not known to nest and would be a transient visitor to the Proposed Narrows facilities below Englebright.

Since bald eagle would not be expected to forage or nest at Proposed Narrows facilities, impacts to the species would be limited to flushing individuals temporarily roosting or passing through the Proposed Narrows. Therefore, the Proposed Narrows operation impacts to bald eagles would be less than significant.

California black rail (Laterallus jamaicensis coturniculus), ST, FP. There are multiple occurrences of California black rail documented downstream of the Proposed Narrows facilities, using saline, brackish, and freshwater emergent wetlands inland of the Yuba River (CDFW 2025a). No nesting or foraging habitat is present within the Proposed Narrows Boundary. Due to the lack of suitable long-term habitat within the Proposed Narrows Boundary, this species is expected to be a transient visitor to the area.

Since California black rail would not be expected to forage or nest at Proposed Narrows facilities, impacts to the species would be limited to flushing individuals temporarily roosting or passing through the Proposed Narrows, Therefore, the Proposed Narrows operation impacts to California black rail would be less than significant.

Ringtail, FP. Occurrences of ringtail have been documented within the Narrows 1 Powerhouse. Ringtail may be impacted by the Proposed Narrows by way of injury or death due to interaction with facility equipment, entrapment in the powerhouse, habitat loss due to vegetation management and/or flushing during use of the Project area.

According to the FEIS (FERC 2019), "…ringtail that live in areas with frequent human activity often change their diet to include easily acquired human food scraps…" and "…may increase activities around buildings and areas with high human activity…" (pages 3-284 to 3-285). This would apply to the Narrows Project, as well. The Narrows Project contains a Proposed Bat Measure, which would result in the installation of exclusion devices and sealing of openings that would limit ringtail access to the Narrows 1 Powerhouse.

Additionally, the majority of the Narrows Project is developed, so there is little potential ringtail habitat that would be impacted by Proposed Narrows activities. Therefore, the Proposed Narrows operation impacts to ringtail would be less than significant.

Other Special-Status Species

Additional special-status species are known or have the potential to occur in the Proposed Narrows Boundary and/or be impacted by Proposed Narrows operation including:

Special-status plants. There are five special-status plant species with the potential to occur within the Proposed Narrows Boundary, though none have been identified within 5 miles of the Proposed Narrows. Narrows' O&M, such as vegetation management, has the potential to impact special-status plants by way of compaction, trampling, and removal of habitat.

Per the 2019 FEIS, "…adverse effects from Project operation and maintenance on special-status plants would be minor because they would affect a small number of occurrences…" (page 3-271) (FERC 2019). This would apply to the Narrows Project, as well, as it does not have known occurrences of special-status plants, nor much potential for new occurrences of special-status plants, due to limited habitat types, lack of possible species and small areas of Proposed O&M activities. Therefore, the Proposed Narrows O&M impacts to special-status plants would be less than significant.

Southern long-toed salamander (Ambystoma macrodactylum sigillatum), SSC. There is suitable habitat for southern long-toed salamander within the Proposed Narrows Boundary. However, there are no known occurrences of the species within 5 miles of the Proposed Narrows. This species can be found in grasslands, dry woodlands, and brush habitats. There is a *de minimus* area of habitat that might be utilized by the species that would overlap with Proposed Narrows operations

At Narrows, the area of proposed operations impacts is limited to a narrow area around the powerhouse and the tram building, which have been maintained for nearly 50 years at this time. Proposed project O&M activities are also limited to as-needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management, and the occasional removal of hazard trees. These are already disturbed locations associated with the Narrows Project, and no new areas are proposed. Wildlife would be anticipated to utilize these already disturbed areas less frequently, and those that do would be adapted to Narrows Project activities.

Given the lack of occurrences and small, already disturbed, area of Proposed Narrows O&M, potential impacts of the operations on southern long-toed salamander would be less than significant.

Coast horned lizard, SSC. There is suitable habitat (scrub, grassland, and chaparral habitats) for the coast horned lizard within the Proposed Narrows Boundary. However, there are no known occurrences of the species within 5 miles of the Narrows. There is also a *de minimus* area of habitat that might be utilized by coast horned lizard that would overlap with Proposed Narrows operations

Proposed project O&M activities are also limited to as-needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management, and the occasional removal of hazard trees. These are already disturbed locations associated with the Narrows Project, and no new areas are proposed. Wildlife would be anticipated to utilize these already disturbed areas less frequently, and those that do would be adapted to Narrows Project activities.

Given the lack of occurrences and the small area of Proposed Narrows O&M, impacts of the Proposed Narrows operations on coast horned lizard would be less than significant.

Special-status raptors. There is potential habitat for other special-status raptors, such as short-eared owl, long-eared owl, and northern harrier, within the Proposed Narrows Boundary. However, none of these species are known to occur within 5 miles of the Proposed Narrows. Short-eared owl and northern harrier have potential nesting habitat within the grasslands present, and long-eared owl has potential nesting habitat within the oak woodland habitat. However, there has been no sighting of nesting or transient individuals of any of these species. The Proposed Narrows could impact special-status raptors during vegetation management by way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area.

Proposed Narrows O&M activities are also limited to as-needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management, and the occasional removal of hazard trees. These are already disturbed locations associated with the Narrows Project, and no new areas are proposed. Wildlife would be anticipated to utilize these already disturbed areas less frequently, and those that do would be adapted to Narrows Project activities.

At the Narrows Project, Yuba Water would follow laws and regulations for the protection of nesting birds, including special-status raptors, to prevent the removal or failure of nests. Additionally, since most of the Narrows Project is developed area, there is a *de minimis* amount of special-status raptors habitat subject to disturbance. Therefore, the Proposed Narrows impact to special-status raptors would be less than significant.

Other special-status and migratory birds. There is suitable habitat (woodlands) for three special-status and many migratory birds within or near the Proposed Narrows Boundary. None of the special-status birds have been observed within 5 miles of the Proposed Narrows. All would be transient through the area. The Proposed Narrows could impact special-status and migratory birds during vegetation management by way of nest failure, due to disturbing or removing active nests, habitat loss (both nesting and foraging), and/or flushing of individuals utilizing the area.

Proposed Narrows O&M activities are also limited to as-needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management, and the occasional removal of hazard trees. These are already disturbed locations associated with the Narrows Project, and no new areas are proposed. Wildlife would be anticipated to utilize these already disturbed areas less frequently, and those that do would be adapted to Narrows Project activities.

At the Narrows Project, Yuba Water would follow laws and regulations for the protection of nesting birds, including special-status and migratory birds, to prevent the removal or failure of nests. Additionally, since most of the Proposed Narrows is developed, there is a *de minimis* amount of special-status raptors habitat subject to disturbance. Therefore, the Proposed Narrows impacts from operations to special-status and migratory birds would be less than significant.

Special-status bats. There are five known species of special-status bats - pallid bat, Western mastiff bat, Townsend's big-eared bat, spotted bat, and Western red bat - documented near the Narrows Project.

The FEIS (FERC 2019) analyzed potential impacts to special-status bats which would also apply to the Narrows Project due to geographic proximity and similar proposed operations in the powerhouse. Per the FEIS, "…bats are sensitive to anthropogenic impacts, both as a direct result of human presence and indirect effects from disturbances to their roosts and surrounding habitat. Loss of roost habitat can be particularly harmful to bats since they use roosts during sensitive life-history periods, including the maternity season and winter hibernating, and many roosts are used by successive generation of bats over many years. Disturbance to maternity colonies can cause bats to abandon young, and effects on maternity colonies can decrease fecundity of individuals and populations as well as subsequent generations of bats. If disturbed during hibernation, bats may awake prematurely, which can cause an elevation in body temperatures and promote the use of stored energy reserves, leaving insufficient energy to survive the rest of the winter. Changes in the microclimate of roosts from the removal of trees and other habitat degradation and alterations can make roosts unsuitable and contribute to a loss of roost habitat. Implementation of measures to protect roosting bats, especially during the maternity and winter hibernating seasons when bats are most sensitive to disturbance, is important when managing bat populations in a given area because of their low reproductive rate and roost site fidelity…" (page 3-286).

The Proposed Narrows has specific measures in place in order to protect special-status bats, a proposed Bat Management measure, which includes exclusion and protection measures. With the measures and provisions in place and given the minimal O&M in other special-status bat habitat, Proposed Narrows operations' impacts to special-status bats would be less than significant.

American badger, SSC. There is suitable habitat (open spaces with little groundcover) for the American badger within the Proposed Narrows. However, there are no known occurrences of this species within 5 miles of the Proposed Narrows. There is also a *de minimus* area of habitat that might be utilized by American badger that would overlap with Proposed Narrows operations

Proposed project O&M activities are limited to as-needed vegetation management, including herbicide application, around the powerhouse and tram house, non-ground-disturbing facility management, and the occasional removal of hazard trees. These are already disturbed locations associated with the Narrows Project, and no new areas are proposed. Wildlife would be anticipated to utilize these already disturbed areas less frequently, and those that do would be adapted to Narrows Project activities.

Given the lack of occurrences and the small area of Proposed O&M in undeveloped areas, impacts of the proposed Narrows Project operations on American badger would be less than significant.

<u>CEQA Conclusion</u>

Outside of flows (discussed below), the proposed Narrows Project operations are similar to those under existing conditions. Operations for the proposed Narrows Project could impact special-status species through combined direct and non-flow-related indirect impacts, including by death or injury to individuals from vegetation management equipment and trampling by Yuba Water

personnel, habitat loss or degradation (including through introduction of invasive species), application of herbicides, permanent or temporary disturbance caused by Proposed Narrows operations (e.g., noise, dust, vibrations, etc.). However, the proposed Narrows Project measures include provisions for protecting special-status species specifically during O&M activities, as detailed above, that will reduce the impacts of these activities on all known or potential special-status species.

As described above, only northwestern pond turtles and FYLF utilize habitats that may be impacted by the flows along the lower Yuba River. Under the Proposed projects, Yuba Water would continue to operate the Narrows Project to meet YRDP requirements, but the Proposed Narrows Project would not include any additional flow requirements.

Under the proposed Narrows Project, operational impacts to special-status species would be **less than significant.**

Narrows Impact BIO-PP-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

There are no mapped or observed riparian habitat or other sensitive natural communities within the Narrows Project Boundary, nor in any area potentially affected by proposed Narrows O&M (outside of flows). Therefore, no impacts are anticipated to riparian habitat or sensitive communities during Proposed Narrows Operations.

Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements for flows in the lower Yuba River. The Proposed Narrows Project does not include any additional flow requirements.

CEQA Conclusion

As riparian habitats and sensitive communities would not be affected by flow or non-flow Narrows Project operations, the Proposed Narrows Project would have **no impact** to these resources.

Narrows Impact BIO-PP-3: Operations Impacts on Wildlife Movement Corridors

There is an NLB that starts just above the Narrows Project and goes through the Yuba River below Englebright and the proposed YRDP boundary for the Narrows 2 development. An ECA connects to the NLB, encompasses the Proposed YRDP and Narrows 2 boundaries below Englebright and the Yuba River, until it ends just before the Highway 20 crossing. There is also one Landscape Linkage along the lower Yuba River below the Highway 20 Crossing. There are no known migratory corridors or nursery sites.

Proposed operations at the Narrows Project would continue in substantial conformance with existing operations, per Chapter 2. None of the Narrows Project minor changes to operations alter conditions in such a way as to increase or decrease wildlife movement. And the majority will continue in already disturbed areas, which wildlife would naturally avoid.

The Narrows 1 Powerhouse is operated in coordination with the Narrows 2 Powerhouse to meet the Proposed Projects requirements for flows in the lower Yuba River. As described above, the flow changes would vary no more than +/- 5 percent from current flows. This would not increase or decrease flows at any point such that they would affect the ability of wildlife species to move, nor alter any of the physical characteristics of the lower Yuba River to substantively improve or limit wildlife movement.

CEQA Conclusion

Proposed Narrows Project operations will occur in the same or similar fashion as existing operations and continue to be confined to the same already disturbed areas of the Narrows Project. Flow changes would not be anticipated to change the velocity of the river, nor the landforms along or in the river, substantively enough to either improve or impede the ability of wildlife to traverse the area. Therefore, under the proposed Narrows Project contribution to flows, impacts from lower Yuba River flows on wildlife movement would be **less than significant.**

Narrows Impact BIO-PP-4: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The area of the proposed Narrows Project operations, excluding flows, downstream of Englebright Dam, is all within Yuba County. The Yuba County General Plan (2011) includes protections such as preservation of native vegetation to the extent possible (NR5.4), avoid loss of jurisdictional wetlands (NR5.9), avoid placing barriers to wildlife movement (NR5.13), and preserve existing oak trees that have a diameter at breast height of 6 inches or greater and all other trees of a diameter at breast height of 30 inches or greater (NR10.1).

The entirety of the lower Yuba River below Englebright Dam is located within Yuba County. None of the identified policies or ordinances within Yuba County addressed river flows or temperatures as they relate to biological resources and their protection.

CEQA Conclusion

Per discussion above, the proposed Narrows Project operations will have no impacts on sensitive habitats, no impacts on wetlands, and less than significant impacts on wildlife movement. Additionally, vegetation management will remain essentially the same as under existing conditions, so no new areas of vegetation, including large trees, are proposed for removal under the proposed Narrows Project operations.

For the remaining potential conflicts with local policies and ordinances, the Proposed Narrows operations will follow BMPs for vegetation management activities, state and federal regulations for the protection of nesting birds, and a proposed measure to protect special-status bats that will incidentally protect ringtails, as well. Local policies and ordinances do not address river flows or temperatures as they relate to biological resources.

Therefore, conflicts to local policies and ordinances by proposed Narrows Project operations would be **less than significant**.

10.5.2 Proposed Projects Compared to the Future Baseline

10.5.2.1 Areas Upstream of Englebright Dam

YRDP Impact BIO-FPP-2: Operations Impacts on Special-status Species

The effects to special-status species for non-flow O&M activities are not affected by changes in upstream flows and are described above under YRDP Impact BIO-PP-2.

Also per the discussion in *BIO-PP-2*, three special-status species (Northwestern pond turtle, FYLF, and little willow flycatcher) have the potential to be impacted by changes in flows in the areas upstream of Englebright Dam, as described:

Northwestern pond turtle. As described above, northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, are adapted to high winter flows, and can survive periodic droughts. They are smaller and less successful reproductively in regulated waters and adversely impacted by extended droughts (Bondi and Marks 2013, Reese and Welsh Jr. 1998, Ashton et al. 2015, USFWS 2023).

The Proposed YRDP relative to the Future Baseline is not substantively different from the Proposed YRDP relative to Existing Conditions in terms of changes to affected reaches' flow and temperatures, and thus, have a similar potential to impact northwestern pond turtles. Higher flows may reduce habitat, but more consistent flows in all WYTs and fewer droughts will allow for more natural overwintering behavior and lessen the adverse impacts of prolonged droughts. Therefore, impacts on northwestern pond turtle would be less than significant.

FYLF. As described above, FYLF surveys and habitat modeling were performed in the Middle Yuba and Oregon Creek reaches and provide the basis for impact analysis. Habitat modeling was not performed in the North Yuba below New Bullards Bar Dam or in the Yuba River downstream of the North Yuba River and Middle Yuba River confluence as no FYLF were found in those reaches. FYLF breeding, egg mass and tadpole development are sensitive to changes in flow and temperature. Specifically, temperatures which consistently remain at or above the 11°C-12°C threshold are considered suitable for breeding and, based on breeding data collected during surveys conducted in the spring of 2011 and 2012 for Study 3.4 Special-Status Amphibians – Foothill Yellow-legged Frog Surveys this temperature threshold is typically met in April in these reaches. Therefore, the period of analysis for temperature impacts extend from April through July.

In the Middle Yuba River and Oregon Creek watersheds, the timing of breeding varies by water year, which is dictated by the magnitude of flows during the spring recession and the associated water temperature. The growth and development of FYLF tadpoles is closely related to water temperature. In experimental enclosures, FYLF tadpoles selected temperatures between 16.5°C and 22.2°C (mean=19.6°C ± 0.6°C) (Catenazzi and Kupferberg 2013). Apart from the effects of flow on water temperature, rapid increases in flows may scour egg masses and relocate tadpoles downstream while rapid decreases in flows may dewater egg masses and strand tadpoles, thereby increasing the likelihood of mortality.

The Proposed YRDP relative to the Future Baseline would increase flows and reduce water temperatures in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam during the potential breeding, egg mass and tadpole development season, over all water years in the simulation (WY 1970-2021). Downstream of Our House Diversion Dam, flow increases range from 19 cfs to 168 cfs, on average. Water temperatures reductions are less than 0.1 °C, on average. Downstream of Log Cabin Diversion Dam, flow increases range from 0 cfs to 34 cfs on average while water temperature reductions ranged from approximately 0.1 °C to about 1.2°C, on average.

As a result of the water temperature reductions due to increased flows, breeding may be delayed but not negatively impacted. The reduction in water temperatures is within suitable temperature thresholds for tadpole development and would likely improve conditions in warmer drier water years.

FYLF habitat modeling in the Middle Yuba River and Oregon Creek demonstrated that the distribution of suitable habitat for both egg mass and tadpole life stages of FYLF tended to be near shore margins, where shallow, slow water conditions exist, or behind large boulders which create suitable velocity conditions. Increased base flows as a result of more closely mimicking natural hydrograph in the Middle Yuba River (AR1) and a proposed spill cessation schedule from May 1 through July 15 at Our House Diversion Dam (AR2) and April 1 through July 31 at Log Cabin Diversion Dam (AR12) would provide protection to breeding adults selecting locations to oviposit egg masses and developing tadpoles during the spring and summer increasing the likelihood of egg mass and tadpole survival.

Therefore, the Proposed Projects relative to the Future Baseline would have a less than significant impact on FYLF.

Little willow flycatcher. Little willow flycatcher's riparian habitat would be affected by the Proposed YRDP relative to the Future Baseline similarly to the Proposed Project relative to the Existing Conditions. All affected reaches will have increased flows, including during below normal and drier years, reducing the likelihood of prolonged droughts and increasing scour that is necessary for riparian establishment. These flows would be anticipated to maintain or increase riparian vegetation on all affected reaches, sustaining or improving habitat for the little willow flycatcher. However, there is only one known occurrence of the species in the area of the Proposed YRDP, downstream of the Log Cabin Diversion Dam on Oregon Creek, and they would be expected to only be passing through the area.

Therefore, the Proposed YRDP relative to the Future Baseline would be anticipated to have a less than significant impact on little willow flycatcher.

CEQA Conclusion

As described above, the Proposed YRDP relative to the Future Baseline is anticipated to have similar impacts to flows and temperatures on affected reaches as the Proposed YRDP relative to the Existing Conditions flows. Impacts on the three special-status species analyzed will be mixed, though generally neutral or slightly positive overall. The Proposed YRDP measures and plans, which will also be in effect, will provide other protections and benefits to the species, as well. The

effects to special-status species for non-flow O&M activities are not affected by changes in upstream flows and are described above under YRDP Impact BIO-PP-2.

Therefore, overall, under the Proposed YRDP, impacts to special-status species from operations upstream of Englebright Dam would be **less than significant** compared to the Future Baseline.

YRDP Impact BIO-FPP-4: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

The effects to riparian habitat and sensitive natural communities for non-flow O&M activities are not affected by changes in upstream flows and are described above under YRDP Impact BIO-PP-4.

Only riparian habitats would be anticipated to be affected by changes in flows and water temperatures, as the other sensitive natural community, Tanoak Forest, is upland.

Flows would generally be higher in all reaches upstream of Englebright, which would maintain riparian vegetation, and may provide for some new establishment in the limited areas where soils are present. In the bedrock-dominated reaches, high flow events may scour riparian vegetation, but the Proposed YRDP flows would support re-establishment. Higher flows may also reduce the presence of NNIP by increasing the extent and duration of soil saturation where soils are present, particularly in Oregon Creek.

CEQA Conclusion

For the reasons above and explained in YRDP Impact BIO-PP-4, under the Proposed Projects relative to the Future Baseline, riparian resources would be maintained or improved. There would be a **beneficial** impact to riparian habitats.

10.5.2.2 Areas Downstream of Englebright Dam - Lower Yuba River

Per Appendix 4B, Proposed Projects flows relative to the Future Baseline in the lower Yuba River are projected to vary marginally from current flows, and temperatures will also increase by up to 1°F in May and June but otherwise differ by less than 0.5°F throughout the year.

YRDP Impact BIO-FPP-9: Operations Impacts on Special-status Species

The effects to special-status species for non-flow O&M activities are not affected by changes in upstream flows and are described above under YRDP Impact BIO-PP-9.

Additionally per the discussion in BIO-PP-9, only two special-status species have the potential to be impacted by changes in flows in the areas downstream of Englebright Dam, as follows:

Northwestern pond turtle, FPT. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures. The changes in the lower Yuba River to both flows and temperatures for the Proposed YRDP relative to the Future Baseline are anticipated to be relatively

minor and would not alter the conditions enough to benefit or negatively affect northwestern pond turtles. Therefore, there would be less than significant impacts to northwestern pond turtles.

Foothill yellow-legged frog, ST. FYLF has been reported in tributaries to the lower Yuba River but is not know from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes from the Proposed YRDP relative to the Future Baseline would be unlikely to affect the habitat where FYFL have been located, as they will be similar to current conditions. FYLF would not be anticipated to benefit or be negatively affected by the limited changes to the lower Yuba River flows and temperatures. Therefore, there would be less than significant impacts to FYLF.

CEQA Conclusion

As described above, only northwestern pond turtle and FYLF utilize habitats that may be impacted by the flows along the lower Yuba River. Per Appendix 4B, Proposed YRDP changes to lower Yuba River flows and temperatures will be relatively minor. Those changes would not change the flows or temperature of the habitats utilized by either species in a way to either cause them harm or benefit. The effects to special-status species for non-flow O&M activities are not affected by changes in upstream flows and are described above under YRDP Impact BIO-PP-9. Therefore, overall, under the Proposed YRDP, impacts on special-status species from operations downstream of Englebright Dam would be **less than significant.**

YRDP Impact BIO-FPP-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

The effects to riparian habitat and sensitive natural communities for non-flow O&M activities are not affected by changes in upstream flows and are described above under YRDP Impact BIO-PP-10.

Compared to the Future Baseline, flows under the Proposed YRDP would maintain or enhance riparian vegetation by more closely mimicking the natural hydrograph and providing better conditions under which new riparian vegetation could become established. No other sensitive communities would be impacted.

CEQA Conclusion

For the reasons explained above and under YRDP Impact BIO-PP-10, the Proposed YRDP would maintain or enhance the riparian vegetation along the lower Yuba River compared to the Future Baseline. Therefore, impacts from the Proposed YRDP Project flows on riparian habitat would be considered **beneficial**.

Narrows Impact BIO-FPP-1: Operations Impacts on Special-status Species

The effects to special-status species for non-flow O&M activities are not affected by changes in upstream flows and are described above under Narrows Impact BIO-PP-1.

As described previously, only two special-status species have the potential to be impacted by changes to flows in the lower Yuba River - northwestern pond turtle and FYLF. As explained

above, under the Proposed Projects, Yuba Water would continue to operate the Narrows Project to meet YRDP requirements, but the Proposed Narrows Project would not include any additional flow requirements.

CEQA Conclusion

Therefore, for the reasons above and in Narrows Impact BIO-PP-1, under the proposed Narrows Project, operational impacts on special-status species would be **less than significant.**

Narrows Impact BIO-FPP-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

The effects to riparian habitat and sensitive natural communities for non-flow O&M activities are not affected by changes in upstream flows and are described above under Narrows Impact BIO-PP-2.

As explained above, under the Proposed Projects, Yuba Water would continue to operate the Narrows Project to meet YRDP requirements, but the Proposed Narrows Project would not include any additional flow requirements.

CEQA Conclusion

For the reasons above and in Narrows Impact BIO-PP-2, the Proposed Narrows Project would have **no impact** to riparian habitats or sensitive communities.

10.5.3 Alternative 1 compared to the Existing Condition

10.5.3.1 Areas Upstream of Englebright Dam

Alternative 1 would substantively raise the flows of the affected reaches. In the North Yuba River, flows are anticipated to be substantively higher in July through November of most WYTs and higher in December through June of normal, dry and critically dry WYTs. On Oregon Creek, flows will be substantially higher (50 to 300 percent in April to June) from March through July. On the Middle Yuba River, flows are projected to be higher in all WYTs and months, but particularly in November, December and April through July, when they may be 60 to 150 percent higher. Finally, on the Upper Yuba River, flows are projected to be substantially higher April through December of all WYTs and year-round in drier WYTs. In summer months, they may increase 100 to 150 percent. Only on the North Yuba River in December through June of wet and above normal WYTs would flows be lower. Overall, temperatures will remain the same on Oregon Creek, and be lower on all other affected reaches. Temperatures will be substantially cooler on the North Yuba River in June through September and the Upper Yuba River from July through September (from 5-8° F).

YRDP Impact BIO-Alt1-1: Construction Impacts on Special-status Species

Construction activities for the YRDP under the Alternative 1 would not differ from those under the Proposed Projects, which are described under YRDP Impact BIO-PP-1.

CEQA Conclusion

Incorporating avoidance and mitigation measures MM-BIO-1 through MM-BIO-16 for Alternative 1 will reduce direct and indirect impacts above Englebright Dam from construction to special-status species to **less than significant with mitigation incorporated**.

YRDP Impact BIO-Alt1-2: Operations Impacts on Special-status Species

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-2.

Per the discussion in *BIO-PP-2*, three special-status species have the potential to be impacted by changes in flows in the areas upstream of Englebright Dam, as follows:

Northwestern pond turtle. Alternative 1 will result in substantively higher flows and lower temperatures on most affected reaches. Higher flows may reduce habitat, but more natural flows and fewer droughts will allow for more natural overwintering behavior and lessen the adverse impacts of prolonged droughts.

FYLF. Alternative 1 would increase flows and reduce water temperatures in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam during the potential breeding, egg mass and tadpole development season (April through July for purposes of analysis), over all water years in the simulation (WY 1970-2021). Downstream of Our House Diversion Dam, flow increases range from 52 cfs to 166 cfs, on average. Water temperatures reductions are less than 0.5 °C, on average. Downstream of Log Cabin Diversion Dam, flow increases range from 2 cfs to 34 cfs on average, while water temperature reductions range from approximately 0.1 °C to about 1.3°C, on average.

As a result of the water temperature reductions due to increased flows, breeding may be delayed but not negatively impacted. The reduction in water temperatures is within suitable temperature thresholds for tadpole development and would likely improve conditions in warmer drier water years.

FYLF habitat modeling in the Middle Yuba River and Oregon Creek demonstrated that the distribution of suitable habitat for both egg mass and tadpole life stages of FYLF tended to be near shore margins, where shallow, slow water conditions exist, or behind large boulders which create suitable velocity conditions. Increased base flows as a result of AR1 and a proposed spill cessation schedule from May 1 through July 15 at Our House Diversion Dam (AR2) and April 1 through July 31 at Log Cabin Diversion Dam (AR12) would provide protection to breeding adults selecting locations to oviposit egg masses and developing tadpoles during the spring and summer increasing the likelihood of egg mass and tadpole survival.

Little willow flycatcher. Little willow flycatcher's riparian habitat would be anticipated to improve under Alternative 1 flows. All affected reaches will have increased flows, including during below normal and drier years, reducing the likelihood of prolonged droughts and increasing scour that is necessary for riparian establishment. These flows would be anticipated to maintain or increase

riparian vegetation on all affected reaches, sustaining or improving habitat for the little willow flycatcher. However, the species is uncommon in the area of the YRDP and would be anticipated to only be passing through.

YRDP Impact BIO-Alt1-3: Construction Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 1 would have the same construction activities as the Proposed YRDP, and therefore, the same impacts on riparian and other sensitive habitats, as described in BIO-PP-3.

CEQA Conclusion

As described above, Yuba Water would avoid all impacts to sensitive vegetation communities to the maximum extent practicable and implementation of avoidance and mitigation measures in conjunction with the Alternative 1 measures and plans would reduce impacts of construction on riparian habitat and sensitive natural communities to **less than significant with mitigation incorporated (MM-BIO 1-7, 11, 12, 15)**.

YRDP Impact BIO-Alt1-4: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Flows would generally be higher in all reaches upstream of Englebright, which would maintain existing riparian vegetation, and may provide for some new establishment where soils are present. In the bedrock-dominated reaches, high flow events may scour riparian vegetation, but the Alternative 1 flows would support re-establishment. Higher flows may also reduce the presence of NNIP by increasing the extent and duration of soil saturation where soils are present, particularly in Oregon Creek.

All other non-flow YRDP O&M activities and measures/plans would be the same under Alternative 1 and the Proposed Projects, and the effects would be the same as described under YRDP Impact BIO-PP-4.

No other sensitive communities would be impacted.

YRDP Impact BIO-Alt1-5: Construction Impacts on Wildlife Movement Corridors

Alternative 1 would have the same construction activities as the Proposed YRDP, and therefore, the same impacts on wildlife movement corridors, as described in YRDP Impact BIO-PP-5.

CEQA Conclusion

Under Alternative 1, direct and indirect impacts from construction to wildlife movement corridors are not anticipated. Therefore, impacts to wildlife movement corridors from Alternative 1 would be **less than significant**.

YRDP Impact BIO-Alt1-6: Operations Impacts on Wildlife Movement Corridors

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects that would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-6. Although flow-based YRDP operations would be different under Alternative 1 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-6, as differences in flows of this magnitude would not meaningfully affect wildlife movement corridors.

CEQA Conclusion

For the same reasons explained for YRDP Impact BIO-PP-6, impacts to wildlife movement corridors from Alternative 1 operations would be **less than significant**.

YRDP Impact BIO-Alt1-7: Construction Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 1 includes all of the same construction activities as the Proposed YRDP. Accordingly, the effects of these construction activities under Alternative 1 would be the same as the effects of those activities under the Proposed YRDP, which are described under YRDP Impact BIO-PP-7.

CEQA Conclusion

As described under Alternative 1, the potential conflicts with local policies and ordinances would be addressed through a combination of measures and plans and the addition of avoidance and mitigation measures. Through this combination, conflicts with local policies and ordinances would be **less than significant with mitigation incorporated (MM-BIO-1 through MM-BIO-16)**.

YRDP Impact BIO-Alt1-8: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects that would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-8. Although flow-based YRDP operations would be different under Alternative 1 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-8, as the applicable local policies and ordinances do not address river flows or temperatures as they relate to biological resources.

CEQA Conclusion

For the same reasons described in YRDP Impact BIO-PP-8, conflicts to local policies and ordinances by Alternative 1 operations would be **less than significant**.

Indirect Impact BIO-Alt1-1: Indirect Impacts on Non-Fisheries Biological Resources on Affected Stream Reaches Above the YRDP from YB/DS Operations under Alternative 1

Alternative 1 would provide an additional 15.6 TAF of water from the Yuba-Bear/Drum-Spaulding projects that would be provided under new FERC licenses for those projects. Alternative 1 would

result in flow increases during April into May of Dry and Critical WYs. The following discussion provides a programmatic analysis of the potential indirect impacts on non-fisheries biological resources for stream reaches above the YRDP associated with this component of Alternative 1. The actual distribution and timing of the water would be subject to FERC's determination and consultation with applicable regulatory agencies. Affected reaches could include Middle Fork Yuba River, the South Yuba River, Canyon Creek, and Fordyce Creek.

There are four special-status species that utilize affected reaches or habitat along affected reaches above the YRDP that may be impacted by the release of this additional 15.6 TAF of water and associated operations changes to facilitate that release, including Sierra Nevada yellow-legged frog and its Critical Habitat, California red-legged frog and its Critical Habitat, northwestern pond turtle, FYLF, and little willow flycatcher.

Multiple riparian habitats and sensitive natural communities were identified along the affected reaches above the YRDP, including 40.1 acres of montane riparian, 10.8 acres of valley foothill riparian, 18.0 acres of wet meadows, 215.4 acres of mixed chaparral, 644.3 acres of montane chaparral, 0.4 acre of valley oak woodland, and 44.1 acres of riverine. Due to the confined, bedrock channels, the riparian vegetation immediately adjacent to the stream channels would be most likely to be impacted by the release of the additional 15.6 TAF of water during April into May of Dry and Critical WYs and associated operations changes to facilitate that release.

There is an NLB that covers most of the affected reaches above YRDP with an accompanying ECA (though much of it is defined as less permeable). Changes in flows along these reaches are not expected to significantly affect wildlife corridors or create conflicts with local policies or ordinances protecting biological resources.

The potential impacts associated with the flow increase and subsequent decrease during April and May in the YB/DS reaches would depend on the specific Alternative 1 operations, including whether provision of the 15.6 TAF is from reductions in diversions out of the upper Yuba River Watershed or from releases from storage, and which reservoirs and streams were utilized to release the flow. Spreading out the flow releases of the 15.6 TAF, such as in the NID (2023) scenario that uses both Lake Spaulding and Bowman Lake, would allow for less substantial changes in flow fluctuations in a given stream. In addition, use of the South Yuba River, which exhibits some relative flashiness during the Spring of some Dry and Critical WYs, would further reduce the differences in the hydrograph and associated flow fluctuation-related effects on special-status species and their habitat relative to use of other streams.

The changes in operations to facilitate the release of the additional 15.6 TAF of water could, but would not necessarily, have potentially significant impacts to non-fisheries biological resources upstream of the YRDP considering the operational flexibility of the upstream YB/DS projects and the manner in which the 15.6 TAF could be provided. As stated by USFWS (2023), although the release of additional water (to meet the 15.6 TAF in Dry and Critical WYs) would have the potential to result in adverse environmental consequences on aquatic habitats (particularly on foothill yellow-legged frogs), USFWS offered to provide technical assistance to FERC and YB/DS Licensees to help develop a flow release schedule that would not cause adverse impacts to special-status species and their habitat. In addition, implementation of both flow increase and decrease ramping rates, as well as geographic source of the flow provision (such as Canyon Creek and the

South Yuba River), could minimize or avoid the potential for impacts on non-fisheries biological resources in the upper Yuba River Watershed.

Moreover, through consultation with jurisdictional agencies such as the USFWS, increased flows through carefully managed releases would provide an opportunity to directly increase habitat availability for special-status species and improve riparian habitat in the reaches above the YRDP in dry and critically dry WYs.

10.5.3.2 Areas Downstream of Englebright Dam - Lower Yuba River

Per Appendix 4B, Alternative 1 flows in the lower Yuba River are projected to vary marginally versus current flows, except for being substantially higher in September and October of drier years. Flows may also be higher in November, December, April during some WYTs. Water temperatures are also similar in most months but will increase slightly in May through July and go down in September of drier years.

YRDP Impact BIO-Alt1-9: Operations Impacts on Special-status Species

Alternative 1's non-flow YRDP operations will be the same as those under the Proposed YRDP. Accordingly, the effects that would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-9.

Per the discussion in BIO-PP-9, two special-status species have the potential to be impacted by changes in flows in the areas downstream of Englebright Dam, as follows:

Northwestern pond turtle, FPT. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures. The projected changes in the flows and temperatures on the lower Yuba River may have some benefits to northwestern pond turtles in that there will be more water and lower temperatures in drier years, which will help prevent long-term droughts that negatively impact the species.

Foothill yellow-legged frog, ST. FYLF has been reported in tributaries to the lower Yuba River but is not know from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes from Alternative 1 would be unlikely to affect the habitat where FYFL have been located, as they will be similar to the current conditions.

YRDP Impact BIO-Alt1-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-10.

Flows under Alternative 1 relative to the Existing Condition would generally be similar but are substantially higher during September and October of dry and critical WYTs. Alternative 1 would maintain existing riparian vegetation, particularly during dry and critical WYTs.

No other sensitive communities would be impacted.

YRDP Impact BIO-Alt1-11: Operations Impacts on Wildlife Movement Corridors

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-11. Although flow-based YRDP operations would be different under Alternative 1 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-11, as differences in flows of this magnitude would not meaningfully affect wildlife movement corridors.

CEQA Conclusion

For the same reasons explained for YRDP Impact BIO-PP-11, under Alternative 1, impacts to movement or wildlife species, migratory corridors and use of wildlife nursery sites downstream of Englebright Dam would be **less than significant**.

YRDP Impact BIO-Alt1-12: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-12. Although flow-based YRDP operations would be different under Alternative 1 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-12, as the applicable local policies and ordinances do not address river flows or temperatures as they relate to biological resources.

CEQA Conclusion

For the same reasons described in YRDP Impact BIO-PP-12, conflicts to local policies and ordinances by Alternative 1 operations would be **less than significant**.

Narrows Impact BIO-Alt1-1: Operations Impacts on Special-status Species

Alternative 1 includes the same non-flow Narrows Project O&M activities as the Proposed Projects. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-1.

As described above, only two special-status species have the potential to be impacted by changes in flows from Alternative 1 in the lower Yuba River - northwestern pond turtle and FYLF.

Alternative 1 Narrows Project operations include a measure that will require coordinated operations and provide flows to the lower Yuba River and provide up to 730 cfs to assist YRDP meet minimum flow requirements. Additionally, a second measure requires that Narrows operations shall not result in a rate of change in streamflow greater than flow fluctuation limits required at USGS gage station 11418000. Therefore, although the Narrows Project operations do not themselves change the flows on the lower Yuba River, they will contribute to flows.

Northwestern pond turtle, FPT. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures. Per Appendix 4B, Alternative 1 flows in the lower Yuba River are projected to vary marginally versus current flows, and temperatures will also increase by up to 1°F in May and June but otherwise differ by less than 0.5°F throughout the year. Northwestern pond turtles would not be anticipated to benefit or be negatively affect by the limited changes to the lower Yuba River flows and temperatures under the contribution to flows.

Foothill yellow-legged frog, ST. FYLF has been reported in tributaries to the lower Yuba River but is not know from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes from the proposed flows in the lower Yuba River under Alternative 1 would be unlikely to affect the habitat where FYFL have been located.

Narrows Impact BIO-Alt1-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 1 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-2.

Under the Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements for flows in the lower Yuba River. Narrows Project operations under Alternative 1 would not include additional flow requirements.

Narrows Impact BIO-Alt1-3: Operations Impacts on Wildlife Movement Corridors

Alternative 1 includes the same non-flow O&M activities as the Proposed Narrows Accordingly, the effects that would be the same as the effects under the Proposed Narrows, which are described above under Narrows Impact BIO-PP-3.

The Narrows 1 Powerhouse is operated in coordination with the Narrows 2 Powerhouse to meet the requirements for flows in the lower Yuba River. As described above, the flow changes under Alternative 1 would closely mimic current flows. This would not increase or decrease flows at any point such that they would affect the ability of wildlife species to move, nor alter any of the physical characteristics of the lower Yuba River to substantively improve or limit wildlife movement.

<u>CEQA Conclusion</u>

As explained above and for Narrows Impact BIO-PP-3, Alternative 1 Narrows Project operations will occur in the same or similar fashion as existing operations and continue to be confined to the same already disturbed areas of the Narrows Project. Therefore, Alternative 1 Narrows Project operations will have a **less than significant** impact on wildlife movement corridors.

Narrows Impact BIO-Alt1-4: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 1 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-4.

The entirety of the lower Yuba River below Englebright Dam is located within Yuba County. None of the identified policies or ordinances within Yuba County addressed river flows or temperatures as they relate to biological resources and their protection.

CEQA Conclusion

For the same reasons described in Narrows Impact BIO-PP-4, conflicts to local policies and ordinances by Alternative 1 Narrows Project operations would be **less than significant**.

10.5.4 Alternative 1 Compared to the Future Baseline

10.5.4.1 Areas Upstream of Englebright Dam

Alternative 1 flows would substantively raise the flows of the affected reaches. In the North Yuba River, flows are anticipated to be substantively higher in July through November of most WYTs and higher in December through June of normal, dry and critically dry WYTs. On Oregon Creek, flows will be substantially higher (50 to 300 percent in April to June) from March through July, as well as higher in November and December of drier years. On the Middle Yuba River, flows are projected to be higher in all WYTs and months, but particularly in November, December and April through July, when they may be 50 to 200 percent higher. Finally, on the Upper Yuba River above Colgate, flows are projected to be substantially higher April through December of all WYTs and year-round in drier WYTs. In summer months, they may increase 100 to 150 percent. Flows will remain similar to current conditions below Colgate except for being higher in September of drier years. Only on the North Yuba River in December through June of wet and above normal WYTs would flows be lower. Overall, temperatures will remain similar on Oregon Creek, the Middle Yuba River and the Upper Yuba River below Colgate, and be lower on the North Yuba River and the Upper Yuba River above Colgate, Temperatures will be substantially cooler on the North Yuba River in June through October and the Upper Yuba River from July through September (from 5-8° F) above Colgate.

YRDP Impact BIO-FAlt1-2 Operations Impacts on Special-status Species

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-2.

Per the discussion in BIO-PP-2, three special-status species have the potential to be impacted by changes in flows in the areas upstream of Englebright Dam, as follows:

Northwestern pond turtle. Alternative 1 will result in substantively higher flows and lower temperatures on most affected reaches. As northwestern pond turtles prefer slower flows, the

higher flows on the affected reaches may reduce the amount of suitable habitat along the reaches for the northwestern pond turtle. This may be particularly true for the periods on Oregon Creek when flows increase 50 to 300 percent, the Middle Yuba River when flows increase 50 to 200 percent, and on the Upper Yuba River when flows increase 100 to 150 percent. However, the change in potential habitat will depend on if there are still available areas of slow-moving currents, especially along the banks, on the affected reaches. These higher flows may reduce habitat, but more natural flows and fewer droughts will allow for more natural overwintering behavior by northwestern pond turtles and lessen the adverse impacts of prolonged droughts. This mix of potential impacts under Alternative 1 would result in a less than significant impact on northwestern pond turtle.

FYLF: Relative to the Future Baseline, Alternative 1 would increase flows and reduce water temperatures in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam during the potential breeding, egg mass and tadpole development season (April through July for purposes of analysis), over all water years in the simulation (WY 1970-2021). Downstream of Our House Diversion Dam, flow increases range from 51 cfs to 168 cfs, on average. Water temperatures reductions are less than 0.2 °C, on average. Downstream of Log Cabin Diversion Dam, flow increases range from 2 cfs to 34 cfs on average, while water temperature reductions range from approximately 0.1 °C to about 1.3°C, on average.

As a result of the water temperature reductions due to increased flows, breeding may be delayed but not negatively impacted. The reduction in water temperatures is within suitable temperature thresholds for tadpole development and would likely improve conditions in warmer drier water years.

FYLF habitat modeling in the Middle Yuba River and Oregon Creek demonstrated that the distribution of suitable habitat for both egg mass and tadpole life stages of FYLF tended to be near shore margins, where shallow, slow water conditions exist, or behind large boulders which create suitable velocity conditions. Increased base flows as a result of Alternative 1 (AR1) and a proposed spill cessation schedule from May 1 through July 15 at Our House Diversion Dam (AR2) and April 1 through July 31 at Log Cabin Diversion Dam (AR12) would provide protection to breeding adults selecting locations to oviposit egg masses and developing tadpoles during the spring and summer increasing the likelihood of egg mass and tadpole survival.

Little willow flycatcher. Little willow flycatcher's riparian habitat would be improved by Alternative 1. All affected reaches will have increased flows, including during below normal and drier years, reducing the likelihood of prolonged droughts and increasing scour that is necessary for riparian establishment. These flows would be anticipated to maintain or increase riparian vegetation on all affected reaches, sustaining or improving habitat for the little willow flycatcher.

Although the Alternative 1 flows would be anticipated to improve little willow flycatcher habitat and help protect any individuals that may be present on or near the YRDP, there is only one known occurrence downstream from Log Cabin Diversion Dam and the species is only anticipated to pass through the area. Therefore, Alternative 1 would be anticipated to have a less than significant impact on little willow flycatcher.

CEQA Conclusion

As described above, the effects of flow-based YRDP operations under Alternative 1 on the three analyzed special-status species will be mixed, though generally neutral or slightly positive overall. And as explained in YRDP Impact BIO-PP-2, the YRDP measures and plans that would be implemented under Alternative 1, will provide other protections and benefits to the species, as well.

Overall, the impacts of YRDP operations under Alternative 1 on special status species above Englebright Dam would be **less than significant** compared to the Future Baseline.

YRDP Impact BIO-FAlt1-4: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-4.

Flows would generally be higher in all reaches upstream of Englebright, which would maintain riparian vegetation, and may provide for some new establishment where soils are present. In the bedrock-dominated reaches, high flow events may scour riparian vegetation, but Alternative 1 flows would support re-establishment. Higher flows may also reduce the presence of NNIP by increasing the extent and duration of soil saturation where soils are present, particularly in Oregon Creek.

No other sensitive communities would be impacted.

CEQA Conclusion

For the reasons explained above and in YRDP Impact BIO-PP-4, Alternative 1 YRDP operations upstream of Englebright would result in a **beneficial impact** to riparian habitat.

Indirect Impact BIO-FAlt1-1: Indirect Impacts on Non-Fisheries Biological Resources on Affected Stream Reaches Above the YRDP from YB/DS Operations under Alternative 1

Alternative 1 would provide an additional 15.6 TAF from the YB/DS projects during April into May of Dry and Critical WYTs. The following discussion provides a programmatic analysis of the potential indirect impacts on non-fisheries biological resources for stream reaches above the YRDP associated with this component of Alternative 1. As described above, the actual distribution and timing of the water would be subject to FERC's determination and consultation with applicable regulatory agencies.

Affected reaches could include Middle Fork Yuba River, the South Yuba River, Canyon Creek, and Fordyce Creek. There are four special-status species that utilize affected reaches or habitat along affected reaches above the YRDP that may be impacted by the release of this additional 15.6 TAF of water and associated operations changes to facilitate that release, including Sierra Nevada yellow-legged frog and its Critical Habitat, California red-legged frog and its Critical Habitat, northwestern pond turtle, FYLF, and little willow flycatcher.

Multiple riparian habitats and sensitive natural communities were identified along the affected reaches above the YRDP, including 40.1 acres of montane riparian, 10.8 acres of valley foothill riparian, 18.0 acres of wet meadows, 215.4 acres of mixed chaparral, 644.3 acres of montane chaparral, 0.4 acre of valley oak woodland, and 44.1 acres of riverine. Due to the confined, bedrock channels, the riparian vegetation immediately adjacent to the stream channels would be most likely to be impacted by the release of the additional 15.6 TAF of water during April into May of Dry and Critical WYs and associated operations changes to facilitate that release.

There is an NLB that covers most of the affected reaches above YRDP with an accompanying ECA (though much of it is defined as less permeable). Changes in flows along these reaches are not expected to significantly affect wildlife corridors or create conflicts with local policies or ordinances protecting biological resources.

The potential impacts associated with the flow increase and subsequent decrease during April and May in the YB/DS reaches would depend on the specific Alternative 1 operations, including whether provision of the 15.6 TAF is from reductions in diversions out of the upper Yuba River Watershed or from releases from storage, and which reservoirs and streams were utilized to release the flow. Spreading out the flow releases of the 15.6 TAF, such as in the NID (2023) scenario that uses both Lake Spaulding and Bowman Lake, would allow for less substantial changes in flow fluctuations in a given stream. In addition, use of the South Yuba River, which exhibits some relative flashiness during the Spring of some Dry and Critical WYs under Future Baseline conditions, would further reduce the differences in the hydrograph and associated flow fluctuation-related effects on special-status species and their habitat relative to use of other streams.

The changes in operations to facilitate the release of the additional 15.6 TAF of water could, but would not necessarily, have potentially significant impacts to non-fisheries biological resources upstream of the YRDP considering the operational flexibility of the upstream YB/DS projects and the manner in which the 15.6 TAF could be provided. As noted above, although the release of additional water (to meet the 15.6 TAF in Dry and Critical WYs) would have the potential to result in adverse environmental consequences on aquatic habitats (particularly on foothill yellow-legged frogs), USFWS offered to provide technical assistance to FERC and YB/DS Licensees to help develop a flow release schedule that would not cause adverse impacts to special-status species and their habitat. In addition, implementation of both flow increase and decrease ramping rates, as well as geographic source of the flow provision (such as Canyon Creek and the South Yuba River), could minimize or avoid the potential for impacts on special-status species and their habitat in the upper Yuba River Watershed.

As described above, although the provision of the 15.6 TAF from YB/DS could potentially result in impacts to special-status species and their habitat in YB/DS reaches upstream of the YRDP, habitat conditions are not expected to necessarily be substantially affected for the special-status species and their habitat in the YB/DS reaches under Alternative 1 because of: (1) operational flexibility (e.g., geographic source) of the YB/DS reservoirs in providing the 15.6 TAF; (2) permutations in the allocation (e.g., variable amounts) among YB/DS reservoirs; (3) the potential for provision of the 15.6 TAF through reductions in diversions (and exports out of the upper Yuba River Watershed), releases from storage, or a combination thereof; (4) implementation of ramping rates (both increases and decreases); and (5) resource agency technical assistance in fashioning the releases. For purposes of this programmatic analysis, it is reasonably foreseeable that YB/DS

operations under Alternative 1 would include available protective measures developed in collaboration with regulatory agencies to minimize impacts to special-status species and their habitat in the YB/DS reaches upstream. Moreover, given that consultation with jurisdictional agencies such as the USFWS will be conducted to develop species sensitive release schedules, increased flows through carefully managed releases would provide an opportunity to directly increase habitat availability for special-status species in the reaches above YRDP, especially in dry and critically dry WYTs.

CEQA Conclusion

Overall, YB/DS operations under Alternative 1 would not be expected to significantly impact special status species, riparian habitat and sensitive natural communities, wildlife movement corridors, or consistency with local policies or ordinances for the protection of biological resources, and may even result in environmental benefits. Therefore, Alternative 1 YB/DS impacts on biological resources upstream of the YRDP would be **less than significant** and **potentially beneficial**. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

10.5.4.2 Areas Downstream of Englebright Dam - Lower Yuba River

Per Appendix 4B, flows in the lower Yuba River for Alternative 1 are projected to vary marginally versus Future Baseline flows, except for being higher in September through December of drier years. Flow may also be much higher (up to 36 percent) in September of drier years. Water temperatures are also similar in most months but will increase slightly in May and June and go down in September of drier years.

YRDP Impact BIO-FAlt1-9: Operations Impacts on Special-status Species

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-9.

Per the discussion in BIO-PP-9, two special-status species have the potential to be impacted by changes in flows in the areas downstream of Englebright Dam, as follows:

Northwestern pond turtle. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures.

The changes in the lower Yuba River to both flows and temperatures under the Alternative 1 are anticipated to be relatively minor such that they would not alter the conditions enough to benefit or negatively affect by the limited changes to the lower Yuba River flows and temperatures for Alternative 1 compared to the Future Baseline. Therefore, there would be less than significant impacts to northwestern pond turtles.

Foothill yellow-legged frog. FYLF has been reported in tributaries to the lower Yuba River but is not known from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes would be unlikely to affect the habitat where FYLF have been located, compared to the Future Baseline.

FYLF would not be anticipated to benefit or be negatively affect by the limited changes to the lower Yuba River flows and temperatures compared to the Future Baseline. Therefore, there would be less than significant impacts to FYLF.

CEQA Conclusion

As described above, Alternative 1 would not change the flows or temperature of the habitats utilized by either northwestern pond turtle or FYLF in a manner that would cause them harm or benefit. And as explained in YRDP Impact BIO-PP-9, the YRDP measures and management plans that would be implemented under Alternative 1 will include provisions for protecting special-status species during O&M activities.

Overall, the impacts of YRDP operations under Alternative 1 on special status species downstream of Englebright Dam would be **less than significant** compared to the Future Baseline.

YRDP Impact BIO-FAlt1-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 1 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-10.

Under Alternative 1 compared to the Future Baseline, flows in the lower Yuba River would generally be similar or higher year-round. Flows that overtop floodplains and could help deposit fines or establish new riparian vegetation occur at 5,000 feet or greater; these flows would generally occur in Above Normal or Wet WYTs and during high-flow events unrelated to the YRDP and Narrows. Flows under Alternative 1 would maintain existing vegetation, particularly in Dry and Critical WYTs.

No other sensitive natural communities would be impacted.

CEQA Conclusion

Under Alternative 1 compared to the Future Baseline, riparian resources would be maintained and a **beneficial** impact would occur.

Narrows Impact BIO-FAlt1-1: Operations Impacts on Special-status Species

Alternative 1 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-1.

As described above, only two special-status species have the potential to be impacted by changes

in flows from Alternative 1 in the lower Yuba River - northwestern pond turtle and FYLF. As explained above, under Alternative 1, Yuba Water would continue to operate the Narrows Project to meet YRDP requirements, but the Narrows Project would not include any additional flow requirements.

CEQA Conclusion

Therefore, for the reasons above and in Narrows Impact BIO-PP-1, under Alternative 1, Narrows Project operational impacts on special-status species would be **less than significant.**

Narrows Impact BIO-FAlt1-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 1 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects that would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-2.

As explained above, under Alternative 1, Yuba Water would continue to operate the Narrows Project to meet YRDP requirements, but the Narrows Project would not include any additional flow requirements.

CEQA Conclusion

For the reasons above and in Narrows Impact BIO-PP-2, Narrows Project operations under Alternative 1 would have **no impact** to riparian habitats or sensitive communities.

10.5.5 Alternative 2 Compared to the Existing Condition

10.5.5.1 Areas Upstream of Englebright Dam

The Alternative 2 flows relative to the Existing Condition would substantively raise the flows of the affected reaches. In the North Yuba River, flows are anticipated to be substantively higher in July through November of most WYTs and higher in December through June and up from 8-9 cfs to 32-62 cfs from June-September of normal, dry and critically dry WYTs. On Oregon Creek, flows will be substantially higher (50 to 300 percent in April to June) from April through July, as well as higher in November and December of drier years. On the Middle Yuba River, flows are projected to be higher in all WYTs and months, but particularly in April through July, when they may be 150 to 300 percent higher. Finally, on the Upper Yuba River above Colgate, flows are projected to be substantially higher April through December of all WYTs and year-round in drier WYTs. In summer months, they may increase 100 to 200 percent. Flows will be higher in December through February, April and May below Colgate. On the North Yuba River in December through June and on Oregon Creek in November and December of wet and above normal WYTs would flows be lower. Additionally, flows will be lower downstream of Colgate from July through October. Overall, temperatures will remain similar on Oregon Creek, except for cooler in June through October. Temperatures will be lower in February and March and substantially lower in January through October, from 5-6°F to 10-14°F. On the Middle Yuba River, temperature will be lower by approximately 0.5°F from April through August. Finally, temperatures will also be substantially lower on the Upper Yuba River above Colgate from June through September,

reducing 5°F to 8°F, and generally lower October, April and May. Downstream of Colgate Powerhouse, temperatures will generally be similar, but lower November and December and higher April through June.

YRDP Impact BIO-Alt2-1: Construction Impacts on Special-status Species

Construction activities for the YRDP under Alternative 2 would not differ from those under the Proposed Projects, which are described under YRDP Impact BIO-PP-1.

CEQA Conclusion

Incorporating avoidance and mitigation measures BIO-1 through BIO-16 for Alternative 2 will reduce direct and indirect impacts above Englebright Dam from construction to special-status species to **less than significant with mitigation incorporated (MM-BIO-1 through MM-BIO-16)**.

YRDP Impacts BIO-Alt2-2: Operations Impacts to Special-Status Species

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-2.

Per the discussion in YRDP Impact BIO-PP-2, three special-status species have the potential to be impacted by changes in flows in the areas upstream of Englebright Dam, as follows:

Northwestern pond turtle. Alternative 2 will result in substantively higher flows and lower temperatures on most affected reaches. As northwestern pond turtles prefer slower flows, the higher flows on the affected reaches may reduce the amount of suitable habitat along the reaches for the northwestern pond turtle. This may be particularly true for the periods on Oregon Creek when flows increase 50 to 300 percent, the Middle Yuba River when flows increase 150 to 300 percent, and on the Upper Yuba River when flows increase 100 to 150 percent. However, the change in potential habitat will depend on if there are still available areas of slow-moving currents, especially along the banks, on the affected reaches. Higher flows may reduce habitat, but more natural flow regimes and fewer droughts will allow for more natural overwintering behavior and lessen the adverse impacts of prolonged droughts.

FYLF. As compared to the Existing Condition, Alternative 2 would increase flows and reduce water temperatures in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam during the potential breeding, egg mass and tadpole development season (April through July for purposes of analysis), over all water years in the simulation (WY 1970-2021). Downstream of Our House Diversion Dam, flow increases range from 61 cfs to 353 cfs, on average. Water temperatures reductions are less than 1.0°C, on average. Downstream of Log Cabin Diversion Dam, flow increases range from 2 cfs to 34 cfs on average while water temperature reductions ranged from approximately 0.3 °C to about 2.5°C, on average.

As a result of the water temperature reductions due to increased flows, breeding may be delayed, but not negatively impacted. The reduction in water temperatures is within suitable temperature

thresholds for tadpole development and would likely improve conditions in warmer drier water years.

FYLF habitat modeling in the Middle Yuba River and Oregon Creek demonstrated that the distribution of suitable habitat for both egg mass and tadpole life stages of FYLF tended to be near shore margins, where shallow, slow water conditions exist, or behind large boulders which create suitable velocity conditions. Breeding habitat availability would not be negatively affected due to the increased base flows as a result of Alternative 2 as habitat would continue to persist in margin habitat where suitable conditions exist. FYLF have evolved with and are adapted to the snow-melt runoff recession period in the Sierra Nevada (Lind and Yarnell, 2011). Therefore, the longer more gradual recession limb of the hydrograph expected as a result of Alternative 2, would be expected to sustain the current populations of FYLF in the Middle Yuba and Oregon Creek reaches.

Little willow flycatcher. Little willow flycatcher's riparian habitat would be improved by the Alternative 2. All affected reaches will have increased flows, including during below normal and drier years, reducing the likelihood of prolonged droughts and increasing scour that is necessary for riparian establishment. These flows would be anticipated to maintain or increase riparian vegetation on all affected reaches, sustaining or improving habitat for the little willow flycatcher.

Although the Alternative 2 flows would be anticipated to improve little willow flycatcher habitat and help protect any individuals that may be present on or near the YRDP, there is only one known occurrence downstream from Log Cabin Diversion Dam and the species is only anticipated to pass through the area.

YRDP Impact BIO-Alt2-3: Construction Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 2 would have the same construction activities as the Proposed YRDP, and therefore, the same impacts on riparian and other sensitive habitats, as described in BIO-PP-3.

CEQA Conclusion

As described above, Yuba Water would avoid all impacts to sensitive vegetation communities to the maximum extent practicable and implementation of avoidance and mitigation measures in conjunction with the Alternative 2 measures and plans would reduce impacts of construction on riparian habitat and sensitive natural communities to **less than significant with mitigation incorporated (MM-BIO 1-7, 11, 12, 15)**.

YRDP Impact BIO-Alt2-4: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-4.

Flows would generally be higher in all reaches upstream of Englebright, which would maintain existing riparian vegetation, and may provide for some new establishment where soils are present. In the bedrock-dominated reaches, high flow events may scour riparian vegetation, and the re-

establishment of vegetation may be hindered in the North Yuba and upper Yuba River by the duration and timing of Alternative 2 flows, which would be contradictory to the natural hydrograph. Higher flows may reduce the presence of NNIP by increasing the extent and duration of soil saturation where soils are present, particularly in Oregon Creek. Alternative 2 would lack distinct scouring springtime flows of a natural hydrograph, with the exception of Oregon Creek flows. The lateral distribution of riparian vegetation may move outward/upward within the channels from inundation of existing vegetation and higher ordinary water lines.

Alternative 2 would continue to maintain existing riparian resources by increasing flows in the Middle Yuba River and Oregon Creek, by increasing availability of sediment and LWM in all reaches upstream of Englebright Reservoir (GS2 and GS3) and by monitoring changes in riparian vegetation (AR7). Alternative 2 would also include Yuba Water's proposed flow measures (AR2) to increase existing minimum flows and establish five WYTs that would trigger various conditions (e.g., minimum flow releases) in the new license and provide flows which more closely correlate with the natural hydrograph. However, the unimpaired flows included in Alternative 2 could offset some of the benefits of GS2, GS3, AR7, and AR2.

No other sensitive natural communities would be impacted.

YRDP Impact BIO-Alt2-5: Construction Impacts on Wildlife Movement Corridors

Alternative 2 would have the same construction activities as the Proposed YRDP, and therefore, the same impacts on wildlife movement corridors, as described in YRDP Impact BIO-PP-5.

CEQA Conclusion

Under Alternative 2, direct and indirect impacts from construction to wildlife movement corridors are not anticipated and therefore, would be **less than significant.**

YRDP Impact BIO-Alt2-6: Operations Impacts on Wildlife Movement Corridors

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-6. Although flow-based YRDP operations would be different under Alternative 2 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-6, as differences in flows of this magnitude would not meaningfully affect wildlife movement corridors.

CEQA Conclusion

For the reasons explained for YRDP Impact BIO-PP-6, impacts to wildlife movement corridors from Alternative 2 operations would be **less than significant.**

YRDP Impact BIO-Alt2-7: Construction Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 2 includes all of the same construction activities as the Proposed YRDP. Accordingly, the effects of these construction activities under Alternative 2 would be the same as the effects of those activities under the Proposed YRDP, which are described under YRDP Impact BIO-PP-7.

CEQA Conclusion

As described, under Alternative 2, the potential conflicts with local policies and ordinances would be addressed through a combination of measures and plans and the addition of avoidance and mitigation measures. Through this combination, conflicts with local policies and ordinances would be **less than significant with mitigation incorporated (MM-BIO-1 through MM-BIO-16)**.

YRDP Impact BIO-Alt2-8: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-8. Although flow-based YRDP operations would be different under Alternative 2 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-8, as the applicable local policies and ordinances do not address river flows or temperatures as they relate to biological resources.

CEQA Conclusion

For the same reasons described in YRDP Impact BIO-PP-8, conflicts to local policies and ordinances by Alternative 2 operations would be **less than significant**.

10.5.5.2 Areas Downstream of Englebright Dam – Lower Yuba River

Per Appendix 4B, Alternative 2 flows in the lower Yuba River are projected to be higher in November through May, including substantially December and February through May. Flow will also be much higher in June of drier years. On the other hand, flows will be much lower July through September. Water temperatures are also similar in most months (though lower November through April and higher May through October). However, water temperatures will get progressively higher from wetter to drier years, including getting up to 3°F to 5°F warmer in June through August.

YRDP Impact BIO-Alt2-9: Operations Impacts on Special-status Species

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-9.

Per the discussion in BIO-PP-9, two special-status species have the potential to be impacted by changes in flows in the areas downstream of Englebright Dam, as follows:

Northwestern pond turtle. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures.

The changes in the lower Yuba River to both flows and temperatures under Alternative 2 may vary in their potential effects on northwestern pond turtle. The higher flows will occur at times when flows are already high in the lower Yuba River, and northwestern pond turtle will be expected to overwinter during much of the period. The higher flows and lower temperatures in these winter months may also encourage turtles to overwinter more naturally than regulated flows.

Foothill yellow-legged frog. FYLF has been reported in tributaries to the lower Yuba River but is not known from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes would be unlikely to affect the habitat where FYLF have been located.

YRDP Impact BIO-Alt2-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects that would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-10.

Flows under Alternative 2 relative to Existing Conditions would be higher in the lower Yuba River during some months, although bankful would not exceed (5,000 cfs) under any WYTs. Existing riparian vegetation would be maintained, and the decreasing of flows from winter to spring may provide adequate conditions for the establishment of new riparian vegetation, although flows would not mimic the natural hydrograph. Alternative 2 flows would not be high enough contribute to the distribution of sediment or LWM onto the cobble floodplains.

No other sensitive natural communities would be impacted.

YRDP Impact BIO-Alt2-11: Operations Impacts on Wildlife Movement Corridors

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects that would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-11. Although flow-based YRDP operations would be different under Alternative 2 and the Proposed YRDP, these differences would not change the analysis and conclusions in YRDP Impact BIO-PP-11, as differences in flows of this magnitude would not meaningfully affect wildlife movement corridors.

CEQA Conclusion

For the same reasons explained for YRDP Impact BIO-PP-11, under Alternative 2, impacts to movement or wildlife species, migratory corridors and use of wildlife nursery sites downstream of Englebright Dam would be **less than significant.**

YRDP Impact BIO-Alt2-12: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects that would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-12. Although flow-based YRDP operations would be different under Alternative 2 and the Proposed YRDP, these differences would not change the analysis and

conclusions in YRDP Impact BIO-PP-12, as the applicable local policies and ordinances do not address river flows or temperatures as they relate to biological resources.

CEQA Conclusion

For the same reasons described in YRDP Impact BIO-PP-12, conflicts to local policies and ordinances by Alternative 2 YRDP operations would be **less than significant.**

Narrows Impact BIO-Alt2-1: Operations Impacts on Special-status Species

Alternative 2 includes the same non-flow Narrows Project O&M activities as the Proposed Projects. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-1.

As described above, only two special-status species have the potential to be impacted by changes in flows from Alternative 2 in the lower Yuba River - northwestern pond turtle and FYLF.

Alternative 2 Narrows Project operations include a measure that will require coordinated operations and provide flows to the lower Yuba River and provide up to 730 cfs to assist YRDP meet minimum flow requirements. Additionally, a second measure requires that Narrows Project operations shall not result in a rate of change in streamflow greater than flow fluctuation limits required at USGS gage station 11418000. Therefore, although the Narrows Project operations do not themselves change the flows on the lower Yuba River, they will contribute to flows.

Northwestern pond turtle. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures.

Per Appendix 4B, Alternative 2 flows in the lower Yuba River are projected to be higher in the winter through spring months and lower in the summer and fall. The temperature will similarly be lower in the winter and spring and higher in the late spring through October. Northwestern pond turtles would not be anticipated to benefit or be negatively affect by the changes to the lower Yuba River flows and temperatures under the contribution to flows.

Foothill yellow-legged frog. FYLF has been reported in tributaries to the lower Yuba River but is not know from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes from the proposed flows in the lower Yuba River under Alternative 2 would be unlikely to affect the habitat where FYLF have been located. *Narrows Impact BIO-Alt2-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities*

Alternative 2 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects that would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-2.

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements for flows in the lower Yuba River. Narrows Project operations under Alternative 2 would not include additional flow requirements.

No other sensitive natural communities would be impacted.

Narrows Impact BIO-Alt2-3: Operations Impacts on Wildlife Movement Corridors

Alternative 2 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-3.

The Narrows 1 Powerhouse is operated in coordination with the Narrows 2 Powerhouse to meet the YRDP requirements for flows in the lower Yuba River. As described above, the Narrows Project under Alternative 2 would not include additional flow requirements. Moreover, as noted in YRDP Impact BIO-Alt2-11, the differences in flows under Alternative 2 would not meaningfully affect wildlife movement corridors.

CEQA Conclusion

For the same reasons explained for Narrows Impact BIO-PP-3, Alternative 2 Narrows Project operational impacts on wildlife movement corridors would be **less than significant**.

Narrows Impact BIO-Alt2-4: Operation Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Alternative 2 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects that would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-4.

The entirety of the lower Yuba River below Englebright Dam is located within Yuba County. None of the identified policies or ordinances within Yuba County addressed river flows or temperatures as they relate to biological resources and their protection.

CEQA Conclusion

For the same reasons described in Narrows Impact BIO-PP-4, conflicts to local policies and ordinances by Alternative 2 Narrows Project operations would be **less than significant**.

10.5.6 Alternative 2 compared to the Future Baseline

10.5.6.1 Areas Upstream of Englebright Dam

The Alternative 2 flows would substantively raise the flows of the affected reaches. In the North Yuba River, flows are anticipated to be substantively higher in July through November of most WYTs, higher in December through June of drier years, and up from 8-9 cfs to 32-62 cfs from June-September of normal, dry and critically dry WYTs. On Oregon Creek, flows will be substantially higher (50 to 300 percent in April to June) from April through July, as well as higher in November and December of drier years. On the Middle Yuba River, flows are projected to be higher in all WYTs and months, but particularly in April through July, when they may be 150 to 300 percent higher. Finally, on the Upper Yuba River above Colgate, flows are projected to be substantially higher April through December of all WYTs and year-round in drier WYTs. In

summer months, they may increase by 100 to 200 percent. Flows will be higher in December through May below Colgate, as much as 100 percent higher in April through August. On the North Yuba River in December through June, and on Oregon Creek in November and December of wet and above normal WYTs, flows would be lower. Additionally, flows will be lower downstream of Colgate from July through September. Overall, temperatures will remain similar on Oregon Creek, except for cooler in June through October. On the North Yuba River, temperatures will be lower in February and March and substantially lower in June through October, from 5-6°F to 10-14°F. On the Middle Yuba River, temperature will similar year-round to the Future Baseline, but lower in somewhat lower April through July. Finally, temperatures will also be substantially lower on the Upper Yuba River above Colgate from June through September, reducing 5°F to 8°F, and generally lower March through October. Downstream of Colgate Powerhouse, temperatures will generally be lower November and December and higher April through August.

YRDP Impacts BIO-FAlt2-2: Operations Impacts to Special-Status Species

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-2.

Per the discussion in BIO-PP-2, three special-status species (Northwestern pond turtle, FYLF, and little willow flycatcher) have the potential to be impacted by changes in flows in the areas upstream of Englebright Dam, as follows:

Northwestern pond turtle. Alternative 2 will result in substantively higher flows and lower temperatures on most affected reaches. As northwestern pond turtles prefer slower flows, the higher flows on the affected reaches may reduce the amount of suitable habitat along the reaches for the northwestern pond turtle. This may be particularly true for the periods on Oregon Creek when flows increase 50 to 300 percent, on the Middle Yuba River when flows increase 150 to 300 percent, and on the Upper Yuba River when flows increase 100 to 200 percent. However, the change in potential habitat will depend on if there are still available areas of slow-moving currents, especially along the banks, on the affected reaches. Higher flows may reduce habitat, but more natural flow and fewer droughts will allow for more natural overwintering behavior by northwestern pond turtle and lessen the adverse impacts of prolonged droughts. Therefore, the impacts on northwestern pond turtle would be less than significant.

FYLF. Alternative 2 would increase flows and generally reduce water temperatures in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam during the potential breeding, egg mass and tadpole development season (April through July for purposes of analysis), over all water years in the simulation (WY 1970-2021). Downstream of Our House Diversion Dam, flow increases range from 61 cfs to 354 cfs, on average. Water temperatures reductions are approximately 0.1 °C, on average. Downstream of Log Cabin Diversion Dam, flow increases range from 1 cfs to 30 cfs on average while water temperature reductions ranged from approximately 0.6°C to 2.5°C. However, modeling indicates there may be a slight increase of 0.1°C over the Future Baseline in May. As a result of the water temperature changes due to increased flows, breeding may be delayed but not negatively impacted. The overall reduction in water temperatures is within suitable temperature thresholds for tadpole development and would likely improve conditions in warmer drier water years.

FYLF habitat modeling in the Middle Yuba River and Oregon Creek demonstrated that the distribution of suitable habitat for both egg mass and tadpole life stages of FYLF tended to be near shore margins, where shallow, slow water conditions exist, or behind large boulders which create suitable velocity conditions. Breeding habitat availability would not be negatively affected due to the increased base flows as a result of Alternative 2 as habitat would continue to persist in marginal habitat where suitable conditions exist. FYLF have evolved with and are adapted to the snow-melt runoff recession period in the Sierra Nevada (Lind and Yarnell, 2011). Therefore, the longer more gradual recession limb of the hydrograph expected as a result of Alternative 2, would be expected to sustain the current populations of FYLF in the Middle Yuba and Oregon Creek reaches. Therefore, Alternative 2 will have a less than significant impact on FYLF.

Little willow flycatcher. Little willow flycatcher's riparian habitat would be improved by Alternative 2. All affected reaches will have increased flows, including during below normal and drier years, reducing the likelihood of prolonged droughts and increasing scour that is necessary for riparian establishment. These flows would be anticipated to maintain or increase riparian vegetation on all affected reaches, sustaining or improving habitat for the little willow flycatcher.

Although the Alternative 2 flows would be anticipated to improve little willow flycatcher habitat and help protect any individuals that may be present on or near the YRDP, there is only one known occurrence downstream from Log Cabin Diversion Dam and the species is only anticipated to pass through the area. Therefore, Alternative 2 would be anticipated to have a less than significant impact on little willow flycatcher.

CEQA Conclusion

As described above, the effects of flow-based YRDP operations under Alternative 2 on the three analyzed special-status species will be mixed, though generally neutral or slightly positive overall. And as explained in YRDP Impact BIO-PP-2, the YRDP measures and plans that would be implemented under Alternative 2 will provide other protections and benefits to the species.

Overall, the impacts of YRDP operations under Alternative 2 on special-status species above Englebright Dam would be **less than significant** compared to the Future Baseline.

YRDP Impacts BIO-FAlt2-4: Operations Impacts to Riparian Habitat and Sensitive Natural Communities

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-4.

Alternative 2 would increase the availability of sediment and LWM in all reaches upstream of Englebright Reservoir (GS2 and GS3) and by monitoring changes in riparian vegetation (AR7). Alternative 2 would also include Yuba Water's proposed flow measures (AR2) to increase existing minimum flows and establish five WYTs that would trigger various conditions (e.g., minimum flow releases) in the new license and provide flows which more closely correlate with the natural hydrograph. However, the unimpaired flows included in Alternative 2 could offset some of the benefits of GS2, GS3, AR7, and AR2.

Flows would generally be higher in all reaches upstream of Englebright, with some variation in timing and duration between reaches. The flows would maintain riparian vegetation, although the establishment of new riparian vegetation in the North Yuba River and Oregon Creek may be hindered by high flows in springtime or early summer when new recruits germinate and grow. Higher flows may reduce the presence of NNIP by increasing the extent and duration of soil saturation where soils are present, particularly in Oregon Creek. In the Middle Yuba and upper Yuba River, the lateral distribution of riparian vegetation may move outward/upward within the channels from inundation of existing vegetation and higher ordinary water lines caused by higher overall flows.

No other sensitive natural communities would be impacted.

CEQA Analysis

Operations under Alternative 2 would allow sediment and LWM to pass the diversions. Capturing fines may increase substrate for riparian establishment, and LWM may affect local geomorphology processes, capture fines, or contribute organic material to the system, which also assists with riparian establishment. However, the substantially higher flows, particularly in the Middle Yuba River, may transport fines and LWM through the reach without deposition. Likewise, the timing of higher flows may not support establishment of new riparian vegetation, particularly in the North Yuba and upper Yuba River, although flows in Oregon Creek would be beneficial. Therefore, a **less than significant** impact would occur.

10.5.6.2 Areas Downstream of Englebright Dam - Lower Yuba River

Per Appendix 4B, Alternative 2 flows in the lower Yuba River are projected to be higher in November through May, including substantially December and February through May. Flow will also be much higher in June of drier years. On the other hand, flows will be much lower July through September. Water temperatures are also similar in most months (though lower November through April and higher May through October). However, water temperatures will get progressively higher from wetter to drier years, including getting up to 3°F to 5°F warmer in June through August.

YRDP Impact BIO-FAlt2-9: Operations Impacts on Special-status Species

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-9.

Per the discussion in BIO-PP-9, two special-status species (Northwestern pond turtle and FYLF) have the potential to be impacted by changes in flows in the areas downstream of Englebright Dam, as follows:

Northwestern pond turtle. As described in previous sections on the species, studies indicate that northwestern pond turtles prefer low velocity/slower-flowing portions of rivers, which also tend toward higher temperatures.

The changes in the lower Yuba River to both flows and temperatures under Alternative 2 may vary in their potential effects on northwestern pond turtle. The higher flows will occur at times when flows are already anticipated to be high in the lower Yuba River and northwestern pond turtle will be expected to overwinter during much of the period. The higher flows and lower temperatures in these winter months may also encourage turtles to overwinter more naturally than regulated flows. However, higher water temperatures in drier years might get too warm for the species when accompanying flows are projected to drop substantially lower in summer.

Overall, the balance of effects from the changes in flow and temperature would be anticipated to have a less than significant impact on northwestern pond turtle.

Foothill yellow-legged frog. FYLF has been reported in tributaries to the lower Yuba River but is not known from the mainstem of the river. As described in Appendix 4B, the anticipated flows and temperature changes would be unlikely to affect the habitat where FYLF have been located. Therefore, they will have a less than significant impact on FYLF.

CEQA Conclusion

As explained in YRDP Impact BIO-PP-9, the YRDP measures and management plans that would be implemented under Alternative 2 include provisions for protecting special-status species specifically during O&M activities that will reduce the impacts of these activities on all known or potential species.

The lower Yuba River will have substantial increases in temperature in winter and spring and decreases in July through September, though temperatures will be similar to current temperatures, except in drier years, when they may go up from 3°F to 5°F. The balance of these changes would be anticipated to even out potential impacts to the northwestern pond turtle and not to affect the tributary habitat where FYLF lives off of the mainstem lower Yuba River.

Therefore, overall, the impacts of YRDP operations under Alternative 2 on special-status species downstream of Englebright Dam would be **less than significant** compared to the Future Baseline.

YRDP Impact BIO-FAlt2-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 2 includes the same non-flow O&M activities as the Proposed YRDP. Accordingly, the effects would be the same as the effects under the Proposed YRDP, which are described above under YRDP Impact BIO-PP-10.

Flows under Alternative 2 relative to the Future Baseline would be higher at most locations during November through May, although bankful (5,000 cfs) would not be exceeded except in Wet WYTs. Although riparian vegetation would be maintained, the higher flows would not mimic the natural hydrograph to support new establishment of riparian vegetation and would generally not be high enough contribute to the distribution of sediment or LWM onto the cobble floodplains. Lower flows during July through September may strand less established vegetation, which may further limit the establishment of new riparian vegetation.

No other sensitive natural communities would be impacted.

CEQA Conclusion

Alternative 2 relative to the Future Baseline would include the same non-flow O&M activities as the Proposed YRDP, which do include some provisions that are beneficial to riparian habitat. Under Alternative 2 relative to the Future Baseline, riparian vegetation would be maintained, but not expanded, by flows. No other sensitive natural communities would be impacted. Therefore, a **beneficial** impact would occur.

Narrows Impact BIO-FAlt2-1: Operations Impacts on Special-status Species

Alternative 2 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-1.

As described above, only two special-status species (Northwestern pond turtle and FYLF) have the potential to be impacted by changes to flows from Alternative 2 in the lower Yuba River. As explained above, under Alternative 2, Yuba Water would continue to operate the Narrows Project to meet YRDP requirements, but the Narrows Project would not include any additional flow requirements.

CEQA Conclusion

Therefore, for the reasons above and in Narrows Impact BIO-PP-1, under Alternative 2, Narrows Project operational impacts on special-status species would be **less than significant**.

Narrows Impact BIO-FAlt2-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Alternative 2 includes the same non-flow O&M activities as the Proposed Narrows Project. Accordingly, the effects would be the same as the effects under the Proposed Narrows Project, which are described above under Narrows Impact BIO-PP-2.

Under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements for flows in the lower Yuba River. Narrows Project operations under Alternative 2 would not include additional flow requirements.

No other sensitive natural communities would be impacted.

CEQA Conclusion

For the reasons above and in Narrows Impact BIO-PP-2, Narrows Project operations under Alternative 2 would have **no impact** to riparian habitats or sensitive communities.

10.5.7 No Project Alternative compared to the Existing Condition

10.5.7.1 Areas Upstream of Englebright Dam

YRDP Impact BIO-NP-1: Construction Impacts on Special-Status Species

Under the No Project Alternative, no new construction would occur. The No Project Alternative would not have any significant impact on special-status species associated with construction activities. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-2: Operations Impacts on Special-Status Species

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on special-status species. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-3: Construction Impacts on Riparian Habitat and Sensitive Natural Communities

Under the No Project Alternative, no new construction would occur. The No Project Alternative would not have any significant impact on riparian habitat or sensitive natural communities associated with construction activities. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-4: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on riparian habitat or sensitive natural communities. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-5: Construction Impacts on Wildlife Movement

Under the No Project Alternative, no new construction would occur. The No Project Alternative would not have any significant impact on wildlife movement associated with construction activities. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-6: Operations Impacts on Wildlife Movement

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on wildlife movement. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-7: Construction Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Under the No Project Alternative, no new construction would occur. The No Project Alternative would not have any significant impact related to conflicts with local policies or ordinances protecting biological resources associated with construction activities. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-8: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, related to conflicts with local policies or ordinances protection biological resources. Therefore, **no impact** would occur.

10.5.7.2 Areas Downstream of Englebright Dam - Lower Yuba River

YRDP Impact BIO-NP-9: Operations Impacts on Special-Status Species

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on special-status species. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-10: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on riparian habitat or sensitive natural communities. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-11: Operations Impacts on Wildlife Movement

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on wildlife movement. Therefore, **no impact** would occur.

YRDP Impact BIO-NP-12: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, relating to conflicts with local policies or ordinances protecting biological resources. Therefore, **no impact** would occur.

Narrows Impact BIO-NP-1: Operations Impacts on Special-Status Species

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on special-status species. Therefore, **no impact** would occur.

Narrows Impact BIO-NP-2: Operations Impacts on Riparian Habitat and Sensitive Natural Communities

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on riparian habitat and sensitive natural communities. Therefore, **no impact** would occur.

Narrows Impact BIO-NP-3: Operations Impacts on Wildlife Movement Corridors

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, on wildlife movement. Therefore, **no impact** would occur.

Narrows Impact BIO-NP-4: Operations Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

Under the No Project Alternative, outside of no longer generating power, Yuba Water would generally maintain its current operation and maintenance activities. Because the No Project Alternative would not significantly differ from the Existing Condition, it would not have a significant impact, either directly or indirectly, related to conflicts with local policies or ordinances protecting biological resources. Therefore, **no impact** would occur.

10.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other

current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)).

Hydrologic modeling was used to evaluate the potential cumulative effects of the Proposed Projects and alternatives in combination with other likely changes in operations on hydrology and water supply. The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. For the purposes of this analysis, the area for which cumulative biological resource impacts occur would be the Geographic Extent as defined in Section 4.3.1 in Chapter 4, Framework for Environmental Analysis, and illustrated in Figure 4.3-1.

Projects considered in regard to potential incremental contribution for cumulative impacts are summarized in projects listed in Table 4.9-1. Only those projects that could affect non-fisheries biological resources described in this chapter are included in the qualitative evaluation that is presented in subsequent sections of this chapter. Projects which may impact similar non-fisheries biological resources as those of the YRDP include known projects proposed, in process, or completed, and include the following:

- Water Storage and Conveyance Projects
    - *Yuba-Bear, Upper Drum-Spaulding, and the Lower Drum Hydroelectric Projects (YB/DS relicensings)*
- Ecosystem Restoration and Fisheries Improvement Projects
    - *North Yuba Forest Partnership*
    - *Yuba Foothills Healthy Forest Project*
    - *Upper Yuba Headwaters Forest Restoration Project*
    - *'Inimim Forest Restoration Project*
    - *Yuba Roadside Fuel Treatment Project*
    - *Camptonville Biomass Plant*
    - *Yuba River Resilience Initiative*
    - *Yuba River Watershed Habitat Restoration Plan*
    - *Narrows 2 Large Woody Material Mitigation Plan (completed)*
    - *Hallwood Side Channel and Floodplain Restoration Project*
    - *Yuba River Canyon Salmon Habitat Restoration Project*
    - *Timbuctoo Acquisition and Restoration Project*
    - *Upper Long Bar Habitat Restoration Project*
    - *Lower Long Bar Restoration Project*

- *Upper Rose Bar Habitat Restoration Project*
- *Healthy Rivers and Landscapes (HR&L) Program*

- Flood Control Projects
  - *NBB Dam ARC Spillway Project (ARC Spillway Project)*
  - *USACE NBB Dam and Reservoir WCM Update*
  - *Yuba River North Training Wall (NTW) Project*
  - *500-year Flood Protection Project*
  - *Marysville Ring Levee*

Of the projects listed, several would only affect the cumulative condition of the lower Yuba River and downstream locations. These primarily include water delivery management, recreation improvement, fish passage, and flood control projects implemented downstream of the Englebright Reservoir. All restoration and enhancement projects would cumulatively increase or improve habitats and ecosystem functions in the vicinity of YRDP.

10.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

The Proposed Projects and the projects listed above may all contribute incremental impacts affecting the cumulative condition of non-fisheries biological resources. Potential impacts of these projects are discussed below.

The water storage and conveyance project listed above is the existing YB/DS projects, which are long-developed hydropower facilities that are undergoing the same relicensing process as the YRDP, including evaluation of the impacts of any proposed construction on biological resources. They would also be subject to the same regulatory process and permitting as the YRDP, so they would be required to develop and follow avoidance, minimization and mitigation measures for the protection of biological resources. Although the YB/DS relicensing project would involve substantial construction projects, associated impacts would be geographically distinct from, and therefore would not cumulate with, construction impacts to non-fisheries biological resources resulting from the Proposed Projects. Construction activities would also be spread over the implementation of the licenses (projected to be a 30-year term), so the majority of their impact would be limited to a specific term and limited area for each construction project. The Yuba-Bear relicensing would involve some changes in operations that would affect minimum stream flows, spills from project canals and conduits, and the rate of flow fluctuations following spill events.

There are many ecosystem restoration and fisheries improvement projects in the vicinity of the YRDP and Narrows projects which would contribute to the overall improvement of natural resources and ecosystem health, although there may be temporary impacts from construction activities while the work is performed. Several of the projects include improvement of forest health and fuels reduction in areas upstream of Englebright Dam, and would rely on prescribed burning, mechanical/manual treatment, and creation of firebreak among other methods. The Camptonville Biomass Plant would support these forest projects by providing a means to dispose of the generated forest biomass through conversion to renewable energy. Although the forest improvement projects

do not involve the construction of permanent facilities, they may involve heavy equipment and vehicle traffic, temporary staging areas, access roads, skid trails and other ground disturbance. The Camptonville Biomass Plant involves the conversion of an existing old sawmill to a biomass plant, suggesting little or no conversion of sensitive habitats, riparian areas or wetlands, and a more limited presence of special-status species.

Other ecosystem restoration and fisheries improvement projects are located downstream of Englebright Dam which would improve the riparian vegetation and fish habitat in the lower Yuba River. Increases in riparian cover, channel and floodplain improvements, and LWM installations would contribute to immediate and long-term ecosystem improvements. Although the forest improvement projects do not involve the construction of permanent facilities, they may involve heavy equipment and vehicle traffic, temporary staging areas, access roads, skid trails and other ground disturbance.

Flood control projects include both the implementation of water management and the construction of physical structures. Water management projects specific to flood control include the ARC Spillway Project and the USACE NBB Dam and Reservoir WCM Update, although many of the water agreements listed in Table 4.9-1 may also influence how flood control is managed. The USACE New Bullards Bar Dam and Reservoir WCM Update[16] would likely alter the timing and duration of flows and would be temporary and would occur around storm events. Although specific changes to flows are speculative at this time, it is anticipated that the overall flow regime would remain largely unchanged. The combined operational flows of the YRDP, Yuba-Bear, and Drum-Spaulding projects would be coordinated, and be protective of sensitive aquatic biological resources, including northwestern pond turtle and FYLF. The USACE New Bullards Bar Dam and Reservoir WCM Update would provide a flexible water management approach to help water managers selectively retain or release water from New Bullards Bar Dam and Reservoir for increased resilience to droughts and floods and to better manage releases before and during a storm. This may result in flow changes in the North Yuba River and the upper Yuba River that are not currently reasonably foreseeable.

Construction of the ARC Spillway Project was analyzed in a separate EIR (YCWA 2023a) in which construction impacts were considered significant and unavoidable, but they were also considered temporary impacts that would cease once construction work is completed. Impacts would occur within the existing spillway and would also include alterations to an adjacent hillside, the relocation of Marysville Road and an existing scenic overlook, and a permanent soil and rock disposal area that would involve tree removal (YCWA 2023a).

Flood control structures include the building or improvement of levees in Yuba County, and the construction of a training wall in the Hallwood Reach of the lower Yuba River. These projects may have temporary impacts to non-fisheries resources, including the disturbance of riparian vegetation. Generally, levees do not support riparian vegetation or provide habitat for wildlife, and impacts from levee improvements would be temporary and localized. The Yuba River NTW

[16] Potential impacts from *construction* of the ARC Spillway Project are not considered a part of the Proposed Project, Alternative 1, or Alternative 2, but are considered as separate project. Because the ARC Spillway would operate under each of the alternatives, the potential impacts from *operations* are included in each alternative's analysis.

Project may disturb some riparian vegetation that occurs along the north bank of the lower Yuba River, although the project includes potential habitat restoration areas.

The YRDP and Narrows Projects would have impacts on non-fisheries biological resources. These are associated mainly with construction projects and changes in operational flows. None of these impacts were considered to have a significant impact; the CEQA conclusions for the Proposed Projects include the following:

- Impact BIO-1: Special-status species were considered have less than significant impacts, or less than significant with mitigation incorporated in relation to proposed construction in areas upstream of Englebright Dam. An exception is for VELB, which the Narrows Project was considered to have no impact.
- Impact BIO-2: Riparian habitat or sensitive natural communities were considered to have less than significant impacts with mitigation incorporated in relation to proposed construction projects upstream of Englebright Dam. Operational impacts were considered to be beneficial or have a less than significant impact.
- Impact BIO-4: Wildlife movement was considered to have less than significant impacts.
- Impact BIO-6: local ordinances or policies protecting biological resources were considered to have less than significant impacts.

Construction from other projects would not have overlapping project footprints with the Proposed Project YRDP construction footprints, and no cumulative impacts from construction would occur to wildlife, including special status species. Under the cumulative condition, including the Proposed Projects, the cumulative impact to special status species would be less than significant. No construction is proposed under the Narrows Proposed Project.

Overall, the Proposed Projects and these past, present, and future projects are not expected to create a substantial adverse effect to non-fisheries biological resources. Accordingly, the Cumulative Condition, including the Proposed Projects, would not result in a significant non-fisheries biological resource impact relative to the Existing Condition.

YRDP Cumulative Impact BIO-PP-1: Potential for significant cumulative non-fisheries biological impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative non-fisheries biological resources impact would be less than significant. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** relating to non-fisheries biological resources.

Narrows Cumulative Impact BIO-PP-1: Potential for significant cumulative non-fisheries biological impacts resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative non-fisheries biological resources impact would be less than significant. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** relating to non-fisheries biological resources.

10.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Alternative 1 and the projects listed above may all contribute to incremental impacts affecting the cumulative condition of non-fisheries biological resources. Potential impacts of these projects are discussed in Section 10.6.1, while the potential impacts of Alternative 1 are discussed below.

The YRDP and Narrows Projects under Alternative 1 would have impacts on non-fisheries biological resources. These are associated mainly with construction projects and changes in operational flows. None of these impacts were considered to have a significant impact; the CEQA conclusions include the following:

- Impact BIO-1: Special-status species were considered to have less than significant impacts, or less than significant with mitigation incorporated in relation to proposed construction in areas upstream of Englebright Dam. An exception is for VELB, which the Narrows Project was considered to have no impact.
- Impact BIO-2: Riparian habitat or sensitive natural communities were considered to have less than significant impacts with mitigation incorporated in relation to proposed construction projects upstream of Englebright Dam. Operational impacts were considered to have a beneficial impact.
- Impact BIO-4: Wildlife movement was considered to have less than significant impacts.
- Impact BIO-6: Local ordinances or policies protecting biological resources were considered to have less than significant impacts.

Construction from other projects would not have overlapping project footprints with Alternative 1 YRDP construction footprints, and no cumulative impacts from construction would occur to wildlife, including special status species. Under the cumulative condition, including Alternative 1, the cumulative impact to special status species would be less than significant. No construction is proposed under Alternative 1 for the Narrows Project.

Overall, Alternative 1 and these past, present, and future projects are not expected to create a substantial adverse effect to non-fisheries biological resources. Accordingly, the Cumulative Condition, including Alternative 1, would not result in a significant non-fisheries biological resource impact relative to the Existing Condition.

YRDP Cumulative Impact BIO-Alt1-1: Potential for significant cumulative non-fisheries biological impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative non-fisheries biological resources impact would be less than significant. Accordingly, Alternative 1 YRDP Project would result in a **less than significant cumulative impact** relating to non-fisheries biological resources.

Narrows Cumulative Impact BIO-Alt1-1: Potential for significant cumulative non-fisheries biological impacts resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative non-fisheries biological resources impact would be less than significant. Accordingly, Alternative 1 for the Narrows Project would result in a **less than significant cumulative impact** relating to non-fisheries biological resources.

10.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Alternative 2 and the projects listed above may contribute to incremental impacts affecting the cumulative condition of non-fisheries biological resources. The exception to the listed projects is the HR&L Program, which consists of Yuba Water's proposed flow contribution and construction of habitat enhancements. This project would contribute beneficially to riparian habitat health and ecosystem improvements under the Proposed Project and Alternative 1, but is not considered under Alternative 2, because the flow requirements of the HR&L Program and Alternative 2 could not be implemented at the same time and are mutually exclusive. Potential impacts of all other projects are discussed in Section 10.6.1, while the potential impacts of Alternative 2 are discussed below.

The YRDP and Narrows Projects under Alternative 2 would have impacts on non-fisheries biological resources. These are associated mainly with construction projects and changes in operational flows. None of these impacts were considered to have a significant impact; the CEQA conclusions include the following:

- Impact BIO-1: Special-status species were considered to have less than significant impacts, or less than significant with mitigation incorporated in relation to proposed construction in areas upstream of Englebright Dam. An exception is for VELB, which the Narrows Project was considered to have no impact.
- Impact BIO-2: Riparian habitat or sensitive natural communities were considered to have less than significant impacts with mitigation incorporated in relation to proposed construction projects upstream of Englebright Dam. Operational impacts were considered to have a less than significant impact.
- Impact BIO-4: Wildlife movement was considered to have less than significant impacts.
- Impact BIO-6: Local ordinances or policies protecting biological resources were considered to have less than significant impacts.

Construction from other projects would not have overlapping project footprints with Alternative 2 YRDP construction footprints, and no cumulative impacts from construction would occur to wildlife, including special status species. Under the cumulative condition, including Alternative 2, the cumulative impact to special status species would be less than significant. No construction is proposed under Alternative 2 for the Narrows Project.

Overall, Alternative 2 and these past, present, and future projects are not expected to create a substantial adverse effect to non-fisheries biological resources. Accordingly, the Cumulative

Condition, including Alternative 2, would not result in a significant non-fisheries biological resource impact relative to the Existing Condition.

YRDP Cumulative Impact BIO-Alt2-1: Potential for significant cumulative non-fisheries biological impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative non-fisheries biological resources impact would be less than significant. Accordingly, Alternative 2 YRDP Project would result in a **less than significant cumulative impact** relating to non-fisheries biological resources.

Narrows Cumulative Impact BIO-Alt2-1: Potential for significant cumulative non-fisheries biological impacts resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative non-fisheries biological resources impact would be less than significant. Accordingly, Alternative 2 for the Narrows Project would result in a **less than significant cumulative impact** relating to non-fisheries biological resources.

Table 10.6-1. Avoidance and mitigation measures for YRDP and Operations Activities Above Englebright.

Mitigation Measure Description	New Colgate Powerhouse New Tailwater Depression System	Our House and Log Cabin Diversion Dams Fish Release Outlets	Modification to Lohman Ridge Tunnel Intake	Recreation Facility Construction	Transportation System Maintenance and Upgrades
BIO-1: Project Footprint Work area footprints would be confined as much as reasonably practicable. All parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities would be confined, to the greatest extent possible, to previously disturbed areas. Additionally, the site footprint/area would be clearly defined and marked to avoid working in areas outside of the approved area. Fences and flagging would be installed by the contractor in a manner that does not impact habitats and other sensitive areas to be avoided and that is clearly visible to personnel on foot and operating heavy equipment. Success Criteria: All fencing/flagging installed as needed and maintained throughout the duration of the project.	X	X	X	X	X
BIO-2: Garbage and Microtrash Work areas would be kept clear of garbage, including microtrash (small pieces of trash or smaller, broken-down pieces of trash). Trash and food would be stored in closed containers and removed daily to reduce attractiveness to opportunistic predators such as coyotes, domestic and feral dogs and cats, opossums, skunks, and raccoons. Littering of trash and food waste would be prohibited. Upon completion of a decommissioning activity, the work site would be inspected to ensure it is free of garbage and microtrash. If garbage or microtrash is detected at the site, it would be removed. Success Criteria: All garbage being cleaned daily before workers leave the work site, and no garbage being left behind at the end of construction.	X	X	X	X	X
BIO-3: Vehicular Best Management Practices. All proposed construction and operations-related vehicle traffic would be confined to established roads, staging areas, and parking areas. Vehicle speeds would not exceed 15 miles per hour, on access roads with no posted speed limit, to avoid collision with special-status species or habitats. Additionally, maintenance or refueling of vehicles or equipment must occur in designated areas and/or a secondary containment, located away from wetted areas. Success Criteria: No collisions between wildlife and construction equipment/vehicles, all vehicles and equipment staying on roads and within the work area limits and all refueling or maintenance taking place in designated areas (barring breakdowns).	X	X	X	X	X
BIO-4: Clean Fill Imported fill would be minimized to the extent possible. All imported fill would come from clean sites (soils would be chemically tested as needed) and be weed-free. Success Criteria: Use of local fill only or the confirmation that any imported fill is clean prior to use.	X	X	X	X	X
BIO-5: Worker Environmental Awareness Program (WEAP) A WEAP would be established and implemented prior to the start of work activities in the field and cover biological and cultural resources. The program would be presented by a qualified biologist and a qualified archaeologist to all construction crew members. If new employees join the crew, they would receive formal, approved training prior to working on site. Upon completion of the orientation, employees would sign a form stating they attended the program and understand all protection measures. A fact sheet containing the presented information would also be prepared and distributed. For biological resources, the WEAP would cover special-status wildlife species, general behavior and ecology of these species, their sensitivity to human activities, their legal protection, penalties for violating Federal laws, reporting requirements, mitigation measures, and measures to implement in the event that the species is found during activities. The training would also cover sensitive habitats, wetlands and riparian communities. Success Criteria: An onsite record of all workers taking the program constitutes success of the measure.	X	X	X	X	X
BIO-6: Flagging Sensitive Resources. Prior to any work that may impact sensitive resources (i.e., which include, but are not limited to special-status species, sensitive habitats, and other predetermined areas with significant sensitive resources) that are not to be impacted occurring, any known sensitive resources within or near the proposed work area would be flagged for avoidance. Success Criteria: All fences/flagging being placed around sensitive resources before and maintained for the duration of a construction project, and no impacts occurring beyond the fencing/flagging.	X	X	X	X	X

Table 10.6-1. (Continued).

Mitigation Measure Description	New Colgate Powerhouse New Tailwater Depression System	Our House and Log Cabin Diversion Dams Fish Release Outlets	Modification to Lohman Ridge Tunnel Intake	Recreation Facility Construction	Transportation System Maintenance and Upgrades
BIO-7: Minimization of Vegetation Removal. Disturbance or removal of vegetation would be kept to the minimum necessary to complete YRDP-related activities. Riparian vegetation removal and trimming would be limited to the amount necessary to successfully complete activities. No native riparian trees with a trunk diameter at breast height in excess of 4 in. would be removed without prior consultation and approval from CDFW. Additionally, oaks with a diameter at breast height (DBH) of 6 inches of greater and native trees with a DBH of 30 inches or greater will be avoided, as well as other sensitive habitats. This would include flagging/fencing of riparian habitat, other sensitive habitats, and larger oaks and native trees. Success Criteria: All fences/flagging placed around riparian and other sensitive habitat and larger native trees before and maintained for the duration of a construction project, and no impacts beyond the fence/flag would success of this measure.	X	X	X	X	X
BIO-8: Special-status Semi-Aquatic Species Protections. Prior to the commencement of any YRDP-related activities or utilization of any YRDP facilities (e.g., staging or parking areas, laydown areas, etc.) that may directly affect special-status semi-aquatic species or their associated habitat, a qualified biologist would perform clearance surveys to identify semi-aquatic species. Species will be allowed to leave the area of their own volition, per **BIO-13**. These sweeps prevent direct harm to species via trampling, crushing or other injury, as well as limiting non-flow-related indirect harm by pausing work until species clear the work area so they are not flushed or disturbed by activities (such as noise or dust). Success criteria: no construction-related injury or death of special-status semi-aquatic species.		X	X	X	X
BIO-9: Avoid Work in Flowing Water. No heavy equipment would operate, or any excavation take place, in the portion of the stream where flowing water is present. Success criteria: no heavy equipment being used in flowing water for the duration of construction activities.		X	X	X	X
BIO-10: Migratory Bird and Raptor Surveys. If clearing and/or construction activities occur during the migratory bird nesting season (February 1 – August 31), then preconstruction surveys to identify active migratory bird and/or raptor nests would be conducted by a qualified biologist within 7 days of construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining presence/absence of active nest sites within the proposed impact area, If active nests are located during surveys, a protective buffer would be established around the nests with the size to be determined by a qualified biologist, if not already determined by an existing license measure. Success criteria: detection of nests prior to construction activities and maintenance of buffers throughout the required period of the construction activities or the verified inactivity of the nest(s), whichever comes first.	X	X	X	X	X
BIO-11: No Net Loss of Sensitive Communities. Mitigation for permanent adverse effects on sensitive communities (seasonal wetlands/riparian habitat/other sensitive natural communities) would be provided at a minimum 1:1 ratio. Mitigation can include onsite restoration, in-lieu fee payment, or purchase of mitigation credits at an agency approved mitigation bank. Mitigation as required in regulatory permits issued through CDFW, USFWS, and/or USACE, as well as the revegetation described in the Project Description, may be applied to satisfy this measure. Success criteria: A demonstrable 1:1 ratio of lost habitat to mitigated habitat will measure the success of the mitigation.	X	X	X	X	X
BIO-12: Pre-construction Surveys Prior to the start of activities, not already covered under existing license measures or plans, that may impact biological resources, pre-construction surveys for sensitive habitats and sensitive species would be conducted. Surveys would be conducted by qualified biologists and during the appropriate timeframe for detection of target species, within the given period for the activity (e.g., nesting bird surveys would not be performed for activities that would take place completely outside of the nesting bird season). Success criteria: Survey performance prior to construction, located and flagged/fenced sensitive resources, and include any new sensitive resources in the WEAP.	X	X	X		X
BIO-13: Special-Status Wildlife Species If special-status wildlife species are detected (outside of already described aquatic and semi-aquatic species relocation), those individuals would be allowed to move from the area of their own volition. Work would be halted in the area of the species until they are clear. Damage or injury to special-status species would be reported immediately to the agency(ies) with jurisdiction. Any siting of an ESA-listed species would be reported within one workday to the USFWS and CDFW. Success criteria: Lack of injury or death of wildlife in the work area due to construction activities.	X	X	X	X	X

Table 10.6-1. (Continued).

Mitigation Measure Description	New Colgate Powerhouse New Tailwater Depression System	Our House and Log Cabin Diversion Dams Fish Release Outlets	Modification to Lohman Ridge Tunnel Intake	Recreation Facility Construction	Transportation System Maintenance and Upgrades
BIO-14: Excavations For any activities requiring an excavation, if excavations are to be left open and unattended for more than 12 hours, they would either be covered, surrounded with exclusion fencing, or an escape ramp would be constructed to the bottom of the pit with less than a 2:1 slope, to provide an escape route to prevent small wildlife species (e.g., lizards, rodents) in the area from getting trapped in the excavation. To the extent feasible, excavations would not be left open at the end of the day and would be covered after confirming absence of trapped individuals. Prior to commencement of work activity each day, staff would check excavations to ensure no animals are trapped. Before backfilling or permanently closing any excavation, it would be checked to ensure no wildlife are present within the excavated area. If wildlife has become trapped, it would be removed prior to closure or backfilling. Success criteria; no wildlife being found trapped in excavations,	X	X	X	X	X
BIO-15: Avoidance of Aquatic Habitat Impacts to delineated aquatic resources would be limited to the amount necessary to successfully complete all work activities. To prevent unintended or unnecessary impacts, orange barrier fencing or flagging would be erected to clearly define the aquatic habitat to be avoided. Success criteria: All fences/flagging being placed around aquatic habitat before and maintained for the duration of a construction project, and no impacts occurring beyond the fencing/flagging.	X	X	X	X	X
BIO-16: Bat Protections. If bat exclusion measures are not already in place or bat surveys have not occurred the year of construction, all YRDP buildings (including powerhouses, storage buildings, dams, recreation facilities or other structures), would need to be surveyed for bats, roosts and/or signs of roosts/use. If bats are determined to be utilizing a facility, humane exclusion devices would need to be placed during the appropriate time (November 1-February 28) with construction occurring after confirmation that all bats have been excluded from the facility. Success criteria: Surveys confirming that all bats have been excluded from a facility prior to any construction occurs.	X		X	X	

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CHAPTER 11

RECREATION

11.1 Introduction

This section describes the environmental setting and regulatory framework for environmental impacts related to recreation, and it identifies direct, indirect, and cumulative impacts of the Proposed Projects and Alternatives during construction and O&M.

11.2 Environmental Setting

11.2.1 Yuba River Development Project

11.2.1.1 Areas Upstream of Englebright Dam

Recreation facilities and opportunities are primarily found in the North and Middle Yuba River watersheds. These opportunities occur within the YRDP FERC Boundary, at nearby regional reservoir-based recreation areas, and in areas upstream of the Proposed Projects. Each of the opportunities in these areas are summarized below.

11.2.1.2 YRDP Recreation Facilities

Developed and undeveloped recreation opportunities are available at New Bullards Bar Reservoir and the Our House and Log Cabin Diversion Dams. Developed recreation facilities exist at New Bullards Bar Reservoir, which includes overnight camping, picnicking, trails and boat launching facilities. The YRDP has 16 developed recreation facilities, including one group campground (Hornswoggle), three drive-in campgrounds (Schoolhouse, Dark Day, and Cottage Creek), three boat-in campgrounds (Garden Point, Madrone Cove, and Frenchy Point), one picnic area (Dark Day), two observation sites (Sunset and Dam), two developed boat launches (Cottage Creek and Dark Day, one cartop boat ramp (Moran Road Boat Access Site), two recreational trails (Schoolhouse and Bullards Bar), and floating comfort stations. All of the recreation facilities are located on NFS land, except for the Dam Observation Site, Cottage Creek Boat Launch and small portions of the Bullards Bar Trail, which are located on land owned by Yuba Water. The YRDP also includes two undeveloped recreation sites at Our House and Log Cabin diversion dams located on NFS land. A summary of these facilities and sites including their associated amenities is provided in Table 11.2-1.

In 2021, Yuba Water completed the reconstruction of Cottage Creek Campground consisting of seven double campsites (design capacity of 10 people-at-one-time per site) and two triple campsites (design capacity of 15 PAOT per site) for a total camping capacity of 100 people. Each campsite consists of a group fire ring, picnic tables, food lockers, and paved vehicle parking spurs for RVs and single vehicles. The campground also has a host site with a holding tank and water hookup, two 2-unit vault restroom buildings, a potable water distribution system, overflow parking area (12 single spaces) and trash receptacles. In addition, the campground has tribal features and interpretation, including a ceremonial area, interpretive loop trail, and interpretive displays

throughout the campground that highlight the tribal traditional uses and history in the campground vicinity.

The Cottage Creek Boat Launch consists of a main parking area and overflow/roadside parking area, and a two-lane concrete launch ramp (Figure 11.2-1). In 2020, Yuba Water completed reconstruction of the main and overflow parking areas to increase the total parking capacity to 200 single vehicle spaces and 113 spaces for vehicles with trailers. The launch ramp and restrooms remain unchanged.

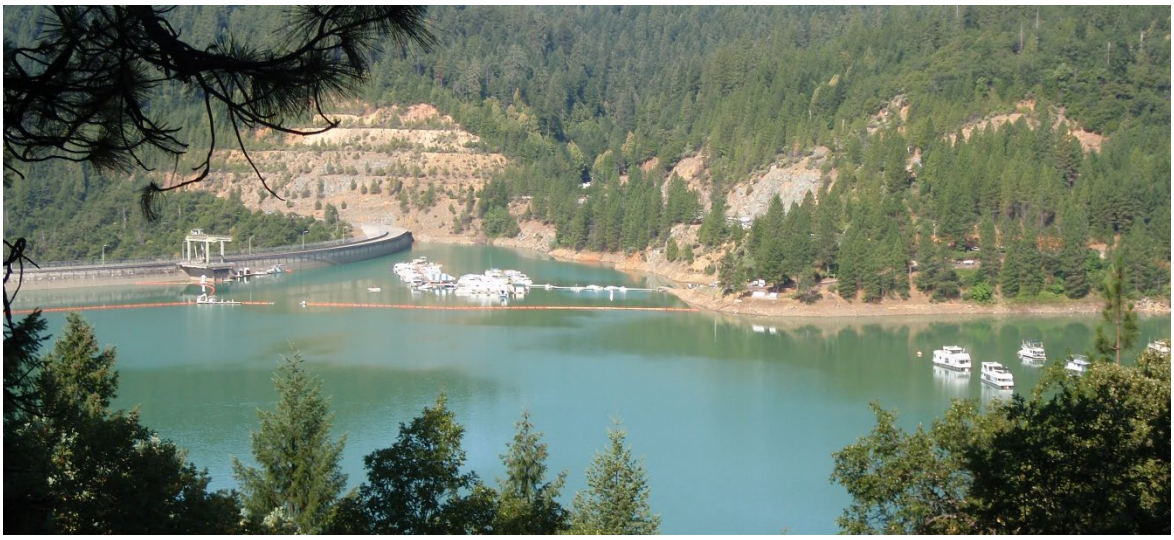
The Dark Day Boat Launch consists of a main parking area, overflow parking area, and three-lane concrete launch ramp (Figure 11.2-1). In 2020, Yuba Water completed reconstruction of the main and overflow parking areas to increase the total parking capacity to 80 single vehicle spaces and 139 spaces for vehicles with trailers. The main parking area restroom building was replaced; however, the launch ramp and the overflow parking area restroom remain unchanged.

Recreation activities at New Bullards Bar Reservoir are numerous and varied and include, but are not limited to, fishing, boating, houseboating, swimming, camping, hiking and bicycling (Figure 11.2-1). Motorized boating, including houseboating, is one of the more popular activities at the reservoir. The two diversion dams provide undeveloped recreation opportunities, including primarily day-use activities such as fishing, wildlife viewing, gold panning, and hiking. Undeveloped camping is allowed, but it is rarely observed at the diversion dams.

Table 11.2-1. YRDP developed recreation facilities and undeveloped recreation sites.

Recreation Facility		Fee	Manager	Land Owner-ship	Campsites						Picnic Sites	Boat Ramp		Parking Spaces			Restrooms			Trail-head
					Type	Total	Single	Double	Triple	Group		No.	Lanes	Total	Single	Double	Total	Vault	Flush	
NEW BULLARDS BAR RESERVOIR																				
Schoolhouse Campground		Yes	USFS	NFS	tent/ RV	57	44	13	0	0	0	0	0	20	20	0	5	1	4	Yes
Hornswoggle Group Campground		Yes	USFS	NFS	tent/ RV	6	0	0	0	6	0	0	0	0	0	0	4	2	2	No
Dark Day Campground		Yes	USFS	NFS	tent	10	6	3	1	0	0	0	0	0	0	0	2	2	0	Yes
Cottage Creek Campground		Yes	USFS	NFS	--	9	0	7	2	0	0	0	0	13	13	0	2	2	0	No
Garden Point Boat-In Campground		Yes	USFS	NFS	tent	16	12	4	0	0	0	0	0	0	0	0	3	3	0	No
Madrone Cove Boat-In Campground		Yes	USFS	NFS	tent	10	10	0	0	0	0	0	0	0	0	0	1	1	0	No
Frenchy Point Boat-In Campground		Yes	USFS	NFS	tent	7	6	1	0	0	0	0	0	0	0	0	0	0	0	No
Dark Day Boat Launch	Main	No	USFS	NFS	--	0	0	0	0	0	0	1	2-3	103	39	64	1	1	0	Yes
	Overflow	No	USFS	NFS	--	0	0	0	0	0	0	0	0	73	18	55	1	1	0	No
Cottage Creek Boat Launch		No	YCWA	YCWA	--	0	0	0	0	0	1	1	2	209	130	79	2	2	0	No
Dark Day Picnic Area		No	USFS	NFS	--	0	0	0	0	0	13	0	0	14	14	0	1	1	0	No
Sunset Observation Site		No	USFS	NFS	--	0	0	0	0	0	1	0	0	60	60	0	1	1	0	Yes
Dam Observation Site		No	USFS	YCWA	--	0	0	0	0	0	0	0	0	24	24	0	0	0	0	No
Moran Road Boat Access Site		No	USFS	NFS	--	0	0	0	0	0	0	1	1	8	8	0	1	1	0	No
Bullards Bar Trail		No	USFS	NFS/ YCWA	--	0	0	0	0	0	0	0	0	N/A[1]	N/A[1]	N/A[1]	0	0	0	Yes
Schoolhouse Trail		No	USFS	NFS	--	0	0	0	0	0	0	0	0	N/A[1]	N/A[1]	N/A[1]	0	0	0	Yes
Floating Comfort Stations		No	YCWA	N/A	--	0	0	0	0	0	0	0	0	0	0	0	7	7	0	No
IMPOUNDMENTS																				
Our House Diversion Dam		No	--	NFS	--	0	0	0	0	0	0	0	0	25	25	0	0	0	0	No
Log Cabin Diversion Dam		No	--	NFS	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Total		**--**	**--**	**--**	**--**	**115**	**78**	**28**	**3**	**6**	**15**	**3**	**5-6**	**549**	**351**	**198**	**31**	**25**	**6**	**--**

[2] Trailhead parking is available where the trail intersects other existing facility parking areas, including at the Schoolhouse Campground overflow parking area (20 spaces), Sunset Vista Point (20 spaces), Dark Day Picnic Area (16 spaces) and Dark Day Boat Launch (39 single spaces).



New Bullards Bar Reservoir as viewed from Sunset Observation Site



Dark Day Boat Launch



Cottage Creek Boat Launch



New Bullards Bar Reservoir as viewed from the Dam Observation Site

Figure 11.2-1. Views of Yuba River Development's New Bullards Bar Reservoir and Developed Boat Launch Facilities.

11.2.1.3 Regional Reservoir-based Recreation Areas

There are four primary reservoir-based recreation areas within a 20-mile radius of the Proposed Projects that provide similar reservoir-based recreation opportunities including developed boat ramps, camping, and shoreline day-use. These include Englebright Reservoir, Rollins Reservoir, Scotts Flat Lake, and Lake Oroville. All of these areas provide similar recreational facilities, though only Lake Oroville provides houseboating opportunities similar to the YRDP at New Bullards Bar Reservoir. Each of these reservoir recreational areas are described below.

Englebright Reservoir
Englebright Reservoir provides a variety of recreation facilities operated by the USACE. The reservoir offers picnicking, angling, boat-in camping, houseboating, and boating. Recreational facilities include two developed boat launches, a marina, and 16 boat-in campgrounds (100 total campsites) (USACE 2025). Each campsite consists of a table, fire grill, lantern hanger, and several tent pads with portable restrooms centrally located in all camping areas. Drinking water is available near each launch ramp. A marina offers boat rentals, mooring, fuel, sanitation, and store facilities.

Rollins Reservoir
Rollins Reservoir is located near Grass Valley to the south of New Bullards Bar Reservoir. The reservoir provides recreational opportunities and facilities at four recreation complexes (Orchard Springs, Greenhorn, Peninsula and Long Ravine). Each recreation complex includes a campground (more than 300 total sites), developed boat ramps (4 ramps, each 2-lanes), day use areas, and parking (more than 400 spaces) (NID 2011).

Scotts Flat Lake
Scotts Flat Lake is located near Nevada City to the southeast of New Bullards Bar Reservoir. The reservoir recreation facilities include a campground (Scotts Flat Campground), developed boat ramp, picnic area, and beaches. The boating facilities also include boat rentals and boat moorings. Boating (motorized and non-motorized), fishing, swimming, picnicking, and waterskiing/wakeboarding are popular recreational activities at that reservoir (NID 2011).

Lake Oroville
Lake Oroville is the second largest reservoir in California and is a key component of the State Water Project. Existing facilities at Lake Oroville offer a variety of recreational opportunities, mostly at the Lake Oroville State Recreation Area (SRA) – an expansive recreation area with a broad number of facilities and opportunities including a visitor center. Camping opportunities include developed campgrounds, primitive campsites, boat-in campsites, and floating campsites. Lake Oroville SRA offers a diverse array of water-based facilities including two full-service marinas, nine developed boat ramps, six car-top boat ramps, and seven floating restrooms. There are developed recreation facilities at the Loafer Creek, Bidwell Canyon, Spillway, and Lime Saddle recreation complexes. Other recreation opportunities at Lake Oroville include picnicking, swimming, equestrian use, hiking, mountain biking, and wildlife viewing (DWR 2006).

Upstream Reservoirs associated with the Yuba-Bear/Drum-Spaulding Projects
Due to the potential for indirect impacts or indirect cumulative impacts that may occur as a result of potential YB/DS operational changes associated with the provision of 15.6 TAF under

Alternative 1 (refer to Chapter 4), additional areas are included in the Project Area for recreation resources, including four reservoirs, Jackson Meadows Reservoir, Bowman Lake, Fordyce Lake, and Lake Spaulding. Each of these reservoirs is described briefly below as it relates to recreation resources.

Jackson Meadows Reservoir

Jackson Meadows Reservoir recreation facilities include eight campgrounds, two picnic areas and two boat launches. As a whole, the reservoir provides overnight camping at 131 developed family campsites, five group camping sites, and 10 boat-in campsites. In addition, the recreation area provides 17 total picnic sites. Developed facilities on NFS land include Aspen Picnic Area, Pass Creek Campground, Pass Creek Overflow, Pass Creek Boat Launch, East Meadow Campground, Findley Campground, Fir Top Campground, Woodcamp Campground, Woodcamp Picnic Area, Woodcamp Boat Launch, Jackson Meadows Vista and Jackson Point Boat-In Campground. The primary recreation activities at the reservoir are camping, boating, fishing, picnicking, swimming and hiking (NID 2011).

Bowman Lake

Recreation facilities at Bowman Lake include one campground (11 campsites), dispersed shoreline campsites (14 total sites), and one informal boat launch ramp. The rustic Bowman Lake Campground is the only developed recreation facility. A gravel road extending down from the campground to the shoreline serves as an undeveloped boat ramp. The primary recreation activities at the reservoir are camping, boating, fishing, hunting, and picnicking. (NID 2011)

Fordyce Lake

Fordyce Lake provides opportunities for a wide variety of recreational activities, including undeveloped camping, OHV use, hiking, hunting, swimming, fishing, and small motorized and non-motorized boating (PG&E 2011). Camping occurs at undeveloped campsites along the southern arm of the reservoir. There is no developed or undeveloped boat ramp at Fordyce Lake; reservoir access occurs via undeveloped shoreline access.

Lake Spaulding

Some dispersed boat-in camping occurs along the shorelines of the reservoir. Lake Spaulding provides opportunities for land-based activities, such as developed camping, picnicking, sightseeing, and water-based activities including boating, swimming, fishing, and water skiing. Lake Spaulding has three developed facilities, including a campground, a picnic area, and a boat launch facility. Lake Spaulding Campground consists of two camping areas with a total of 25 campsites. The upper camping area has 19 campsites. Lake Spaulding Boat Launch consists of a concrete, two-lane ramp and parking area. The picnic area has three sites, consisting of wood picnic tables, and is located along the boat launch facility overlooking the reservoir. (PG&E 2011)

11.2.1.4 Lower Yuba River

Recreational opportunities are more limited, as fewer developed or undeveloped facilities are available in this area (Figure 11.2-2). However, the Yuba River below Englebright Dam has significantly more public fishing locations and is where the vast majority of the river fishing opportunities exist below YRDP facilities. Fishing access locations include Parks Bar, Sycamore Ranch, Hammon Grove Park, Hammonton-Smartsville Road, and the Western Aggregates site.

Sycamore Ranch and Hammon Grove Park are parks operated by Yuba County. Sycamore Ranch provides campgrounds, while Hammon Grove Park is a day-use facility only.

The Narrows Project area does not include any recreation facilities or opportunities. The Narrows Project is located on a steep, rocky slope with no areas conducive to safe recreation by the public (Figure 11.2-2). The FERC Project Boundary only encompasses 2.92 acres and is above and adjacent to a reach of the Yuba River almost directly below the uncontrolled spillway of Englebright Dam. No recreation facilities have been proposed as part of the Narrows Project relicensing.



Lower Yuba River



Narrows Project area downstream of Englebright Reservoir

Figure 11.2-2. Views of the lower Yuba River and the Narrows Project area.

11.3 Regulatory Setting

11.3.1 Federal

11.3.1.1 Federal Power Act

The Federal Power Act is the primary federal statute governing the wholesale transmission and sale of electric power, as well as the regulation of hydroelectric power. Sections 4(e) and 10(a) of the Federal Power Act require FERC to give equal consideration to the power development purposes and the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities, and the preservation of other aspects of environmental quality.

11.3.1.2 Tahoe National Forest Land and Resource Management Plan

The south and east shoreline of New Bullards Bar Reservoir are within the TNF on NFS land. As discussed in Chapter 22, Land Use and Planning, these lands are managed in accordance with the 1990 TNF Land and Resource Management Plan (LRMP), as amended. Specific to recreation, the TNF LRMP identifies certain recreation goals relevant to the Projects area, as follows (USFS 1990):

- Provide a broad spectrum of dispersed and developed recreation opportunities in accordance with identified needs and demands.
- Work with cooperating water agencies and irrigation districts to maintain desirable water levels on reservoirs through the entire length of the recreation season.
- Recreation management will be in concert and cooperation with appropriate city, county, state, and other federal agencies.
- Manage recreation use on lands it administers using the Recreation Opportunity Spectrum (ROS) management system. Under the ROS system, recreation facilities, recreation activities, and landscapes are managed to provide a range of recreation opportunities, including Primitive, Semi-primitive non-motorized, Semi-primitive motorized, Roaded Natural, Rural, or Urban recreation opportunities.
- Understand the value, scarcity, and desired retention of semi-primitive lands within the forest.

11.3.1.3 Plumas National Forest Land and Resource Management Plan

The northwest shoreline of New Bullards Bar Reservoir from the dam to the North Yuba River inflow is within the PNF on NFS land. As discussed in Chapter 22, Land Use and Planning, these lands are managed in accordance with the PNF LRMP as amended. Specific to recreation, the PNF LRMP identifies certain recreation goals relevant to the Project Area, as follows (USFS 1988):

- Providing for a variety of forest-related recreation, and coordinate recreation with other resource use through the ROS system.
- Encouraging growth of privately operated facilities serving public needs.

- Improving and expanding developed facilities and trails to meet demand while reducing unit costs and protecting other resources.
- Completing acquisition of Wild and Scenic River lands and easements.
- Minimizing conflicts between various recreational users.
- Managing selected non-roaded areas to provide for semi-primitive opportunities.
- Allowing use of off-road vehicles (ORVs) wherever user conflicts or unacceptable resource damage are unlikely. Providing separate ORV routes wherever conflicting uses are substantial.

11.3.2 State

Other than the California Environmental Quality Act (CEQA), no State plans, policies, regulations, or laws related to recreation resources apply to the Proposed Projects.

11.3.3 Local

11.3.3.1 Yuba County General Plan

The Yuba County General Plan (Yuba County 2011) identifies Parks and Recreation needs as part of the Natural Resources element of the plan. In this section, the plan generally discusses park and recreation needs for the county, which primarily deal with recreational trail needs and connectivity. Overall, the Yuba County Parks Master Plan (Yuba County 2008) addresses the county's recreation goals and needs.

11.3.3.2 Yuba County Parks Master Plan

The ultimate objective of the Yuba County Parks Master Plan (Yuba County 2008) is to develop a footprint to direct park development within the county (Yuba County 2008). In general, the Master Plan includes a set of goals and objectives, as follows, that can be used to evaluate any new/future projects; and makes recommendations about how to fund new parks and facilities that ensures they remain an asset to the community far into the future (Yuba County 2008).

- **Goal 1: Maximize local resources for parks and recreation**
    a. Develop a cooperative regional park and recreation authority. 1b) Encourage and actively pursue cooperation between governmental agencies, nonprofit organizations, and private business in providing park and recreation services.
    b. Leverage additional funding through matching grants and contributions.
    c. Provide a quality park, recreation, natural open space, and trail system that is efficient to administer and cost-effective to maintain.
    d. Provide a diverse range of recreation programs and services to serve multiple ages, populations, and interests.
    e. Encourage and track volunteer assistance in maintaining the park system and operating recreation programs throughout the County.

- **Goal 2: Partner in responsible economic and community development.**
  a. Create signature recreation opportunities that attract visitors from outside of the area.
  b. Utilize plans as a tool to enhance the park system.
  c. Create opportunities for recreation-based entrepreneurs (such as fishing guides and independent instructors).
- **Goal 3: Enhance individual and community health and wellness.**
  a. Provide high-quality opportunities for active recreation that are engaging and convenient to users.
  b. Develop recreation programming to serve residents in all communities within the County.
  c. Promote a special focus in recreation programming to serve the youth of Yuba County.
  d. Increase the availability of trails for active transportation (walking, biking, etc.).
- **Goal 4: Preserve and promote enjoyment of Yuba County's natural character.**
  a. Provide trails that appropriately access key natural areas.
  b. Preserve land that reflects the diversity of habitats and scenery present in Yuba County.
  c. Use natural areas for multiple purposes, including buffering land uses, managing stormwater, habitat and recreation use.

11.4 Impact Assessment Methodology

Impacts to recreation resources were evaluated quantitatively (where possible) and qualitatively, based on the potential for the Proposed Projects to increase use of recreation areas and resources such that substantial physical deterioration of the resource would occur or would be accelerated; or require the construction or expansion of recreation facilities, which might have an adverse physical effect on the environment. There are no existing Narrows Project recreation facilities, and the Proposed Projects and Alternatives do not include any new Narrows Project recreation facilities. Therefore, impacts associated with Narrows Projects recreation facilities are not analyzed further.

To address the potential for increased use of recreation areas and resources associated with the Proposed Projects, Yuba Water utilized modeled New Bullards Bar Reservoir elevations as well as current recreational use levels and occupancy at Proposed Projects campgrounds as well as projections of future use levels and occupancy to 2050 (YCWA 2017).

11.4.1 Construction

Construction measures associated with the implementation of the YRDP *Recreation Facilities Plan* may result in a short-term disruption to or closure of existing recreational facilities or opportunities that may cause an increase in use of other available recreation facilities and subsequently result in substantial physical deterioration of these facilities. A long-term effect could occur if there are longer-term closures of recreation facilities that may result in increased use of

other available recreation facilities and subsequently result in substantial physical deterioration of these facilities.

The impact analysis qualitatively assesses whether and to what extent these measures could cause increased use at other available recreation facilities that may cause significant or accelerated physical deterioration of these other available public recreation facilities. As noted, there would be no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

11.4.2 Operations

In the study area, impacts on recreation facilities and activities would be associated with changes in facility O&M and recreational use in and adjacent to New Bullards Bar Reservoir due to implementation of the Proposed Projects. For impacts related to Proposed Projects' flow measures, the analysis quantifies the type, location, and magnitude of potential impacts of the Proposed Projects' flow measures due to the resulting changes in reservoir elevations at New Bullards Bar Reservoir. Specifically, this analysis evaluates if the Proposed Projects result in increased use at other available recreation facilities due to an increase in days that specific reservoir-based facilities are not accessible due to reduced New Bullards Bar Reservoir elevations. The facilities include the boat ramps (Cottage Creek and Dark Day) and boat-in campgrounds (Garden Point and Madrone Cove) which are inaccessible when specific reservoir levels are reached.

In addition, this analysis evaluates if Proposed Projects operations would result in a reduction in recreational opportunities because of more difficult access or a loss in access to recreational facilities or opportunities. Notably, Englebright Reservoir (downstream of New Bullards Bar Reservoir), is a highly water-dependent recreational resource (i.e., boating, houseboating, angling, and boat-in camping). However, there would be no operational impacts associated with these recreational opportunities as a result of the Proposed Projects. Englebright Reservoir's water surface elevations would not change in the vast majority of months and water year types and in the few months when changes do occur the water surface elevations are slightly higher ranging from one to six feet higher. As a result, the implementation of the Proposed Projects would not result in a significant change in use due to changes in the availability of the boat ramps and boat-in campground facilities at Englebright Reservoir.

For impacts to stream-based recreation, the analysis compares the location of existing and planned recreation facilities along the river reaches in comparison to the Proposed Projects' instream flow changes. Specifically, this analysis evaluates if Proposed Projects operations would result in increased use at river access facilities that support whitewater boating opportunities, particularly in the Middle Yuba River downstream of Our House Diversion Dam. This analysis relies on instream flow model analysis and GIS analysis of the stream reaches in the study area to locate the existing and planned recreation facilities and qualitatively assess if operations would result in increased use at other available recreation facilities. In addition, this analysis evaluates if Proposed Projects operations would result in a reduction in boating opportunities because of a change in flows outside the optimal boating range (if available) or if changes in flows make the stream reaches unnavigable for boating due to too high or low flows.

11.4.2.1 Indirect Impacts Associated with Alternative 1

Changes in flow-dependent reservoir storage and stream flows associated with the provision of 15.6 TAF from upstream projects (YB/DS) under Alternative 1 were evaluated at a programmatic level for reservoir boat ramp availability and recreational river boating opportunities based on analyses presented in NID and PG&E (2010). Because the actual relative contribution of flow from the MYR and SYR watersheds and associated reservoir operations could vary, this impact analysis utilizes generalized trends in the hydrologic regimes and the general changes in flows modeled by NID (2023) as examples to characterize potential changes that could occur to recreation access and usage conditions under reasonably foreseeable Alternative 1 YB/DS operations. Because the intent of Alternative 1 is only to provide 15.6 TAF of water during April-May of Dry and Critical WYs, the programmatic evaluation of potential impacts to recreation resources in areas upstream of the YRDP under Alternative 1 focuses on changes that could occur during April and May of Dry and Critical WYs.

For purposes of this programmatic analysis, additional potential operations-related indirect effects to areas upstream of the YRDP include reservoir boat ramp availability at Jackson Meadows Reservoir and Lake Spaulding where developed boat ramp facilities existing and in popular Yuba-Bear/Drum-Spaulding reaches in the Middle Yuba River below Milton Diversion Dam and the South Yuba River below Spaulding Dam. These potential impacts are addressed through review of general changes in hydrology modeled by NID (2023) as examples to characterize potential changes that could occur during Dry and Critical water years during applicable peak recreation and boating time periods.

11.4.3 Impact Indicators and Significance Criteria

For the purposes of this analysis, the Proposed Projects would result in a significant impact on recreation resources if they would:

1. **Impact REC-1:** Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
2. **Impact REC-2:** Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

For Alternative 1, simulated operations impact indicators for recreation resources in reservoirs and reaches upstream of the YRDP included changes in reservoir storage and stream flows during April and May of Dry and Critical water years that have the potential to substantially affect the availability of developed boat ramps or increase the use of recreational river boating access facilities in the Middle and South Yuba rivers. Changes in the availability of the developed boat ramps may potentially result in the increased use of other Yuba-Bear/Drum-Spaulding projects or area boat ramps that would have an adverse physical impact due to the deterioration of the ramp facilities. Due to the flexibility in how Alternative 1 could be implemented in the reservoirs and reaches upstream of the YRDP, changes in boat ramp availability were based on changes in storage

(i.e., water surface elevations) relative to the Future Baseline[1]. The assessment of whether impacts would be expected to be substantial considered the potential changes in boat ramp availability in Dry and Critical water years during the peak recreation season (Memorial Day through Labor Day holiday weekends) at reservoirs with developed boat ramps, as follows.

- Developed boat ramps at Jackson Meadows Reservoir
    - Availability of the Pass Creek boat ramp
    - Availability of the Woodcamp boat ramp
- Developed boat ramps at Lake Spaulding
    - Availability of the Lake Spaulding boat ramp

Increases in whitewater boating use on river reaches were based on changes in stream flows relative to the Future Baseline. Increases in whitewater boating use may potentially result in the increased use of river access facilities commonly used for putting in and taking out of the river, which would have the potential to have an adverse physical impact on those facilities due to the deterioration of the river access facilities. The assessment of whether impacts would be expected to be substantial considered the potential changes in flows in Dry and Critical water years during April and May in the known boatable flow ranges on reaches with existing and popular whitewater boating opportunities primarily on the Middle and South Yuba rivers.

- Middle Yuba River
    - Reach from Milton Diversion Dam to Plumbago (18.4 mi)
    - Reach from Plumbago to Our House Diversion Dam (13.9 mi)
- South Yuba River
    - Reach from Langs Crossing to Jolly Boys Mine (4.8 mi)
    - Reach from Jolly Boys Mine to Golden Quartz (2.3 mi)
    - Reach from Golden Quartz to Washington (3.9 mi)

The whitewater boating reaches downstream of Washington on the South Yuba River are popular boating reaches, however, the natural accretion from numerous tributaries into the South Yuba River typically dictates the majority of instream flow within the reaches downstream of the town of Washington. As such, the impacts from the Yuba-Bear/Drum-Spaulding projects are not substantial.

[1] As discussed in Chapter 4, operations-related impact determinations that rely on modeling for Alternative 1 and Alternative 2 rely on the comparison to the Future Baseline scenario.

11.5 Environmental Impact Analysis

11.5.1 Proposed Projects Compared to the Existing Condition

YRDP Impact REC-PP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities

The YRDP *Recreation Facilities Plan* includes a major rehabilitation and improvement program that would involve construction or alteration of all YRDP recreation facilities over the term of the new license. Periodically, recreation facilities may need to be closed to allow Yuba Water to complete the construction work associated with the major rehabilitation or improvements at a recreation facility. As detailed in the *Recreation Facilities* Plan, Yuba Water will aim to complete as much work as possible during periods when the recreation facilities are normally closed - immediately before and after the open season. However, it is expected that some work will require closing the facilities during the typical open season to complete all the proposed work. If construction takes longer than one year and is not overly disruptive, Yuba Water may reconstruct individual campground loops separately if the construction activity would unduly reduce the capacity of the area during a facility's open season. Major rehabilitation and improvement projects have a phased implementation schedule over the first 11 years of the new license to minimize closures that may affect recreation use during the open season.

Notably, there are two boat launch facilities at New Bullards Bar Reservoir. Both boat launch ramp facilities would be functional (i.e., water surface levels cover the boat ramp) in all water year types except in critical water years when water levels would be below the functional water surface elevation of the Cottage Creek Boat Launch ramp in mid-July through September (refer to Appendix 11A for water surface elevation figures). Thus, in most years and under most water year conditions, one of the developed boat launch facilities would always be available and functional while the other undergoes rehabilitation, except for a short period in critical water years.

Of the other YRDP construction activities to modify non-recreational YRDP facilities (i.e., Our House and Log Cabin Diversion Dams Fish Release Outlets and the Lohman Ridge Diversion Tunnel Intake), only the Our House Diversion Dam Fish Release Outlet project would have the potential to impact a recreational use (whitewater boating) and access due to construction, which may lead to displaced users. Regarding the Log Cabin Diversion Dam Fish Release Outlet, recreational access and use is very limited at this location due to a locked gate (with permission of the Forest Service) at the start of Log Cabin Road at Highway 49. Thus, recreational use is very low, and the non-recreational facility construction would not result in a substantial number of displaced recreationists such that it would increase the use at neighborhood or regional parks. Recreational use and facilities do not exist in the vicinity of the Lohman Ridge Diversion Tunnel Intake so there would be no impact on recreation resources.

The Our House Diversion Dam Fish Release Outlet construction would occur during late summer when the minimum flow release from each dam is generally low and outside the peak whitewater boating period (spring/early summer). The construction is anticipated to take up to six months and extend into the winter months, but it would still be outside the peak whitewater boating period.

While this construction would potentially impact recreational access to the Middle Yuba River downstream of Our House Diversion Dam for whitewater boating, the timing and duration of the project would occur at low to no use periods for whitewater boating (flows are typically well below the boatable range in late summer, fall, and winter). Furthermore, numerous other stream reaches are available in the vicinity of Our House Diversion Dam that provide similar boating and fishing opportunities for any potentially displaced recreationists, including elsewhere on the Middle Yuba River and South Yuba River. Therefore, the YRDP construction would not displace a substantial amount of whitewater boaters and anglers who would have also ample alternative stream reach areas to participate in these activities such that it would substantially increase the use of other river reaches and potentially accelerate the deterioration of river access facilities.

Overall, YRDP construction activities under the Proposed Projects would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Operation of Existing, Expanded, and New Recreational Facilities

Operations and maintenance of the YRDP recreation facilities would not increase the number of recreationalists using these facilities. The YRDP itself does not increase the number of recreationists; rather, YRDP recreation facilities help to meet the overall local, regional, and statewide demand for outdoor recreational uses and opportunities.

An examination of existing recreational use data determined that the demand for recreation within the Project Area is estimated to increase by 51 percent from 2012 to 2050 (YCWA 2017). While this demand would increase the weekend peak season occupancy of existing recreation facilities, it is not driven by or linked to any of the proposed recreation facility improvements or operation associated with the license. Rather, the recreational demand and projected demand is based on estimated population changes in the State of California and, in particular, Nevada County where most recreation users originate. The *Recreation Facilities Plan* includes the development of new and expanded recreation facilities to address the increase in demand over the license term. Thus, proposed improvements to project campgrounds and day-use facilities, including expanded/new day-use facilities, expanded parking capacity at boat launches, and expanded or new overnight capacity at campgrounds would not cause an increase in visits but would have a beneficial effect on recreation resources by providing additional facilities that would reduce impacts on existing facilities.

Furthermore, Yuba Water's implementation of the *Recreation Facilities Plan* includes a facility occupancy monitoring component to identify when recreational capacity at the YRDP facilities is nearing full capacity and to evaluate appropriate management actions to alleviate future potential capacity issues. Management actions could include providing additional visitor management and/or enforcement, providing adequate buffers between uses, expanding and/or developing new facilities/use areas, and providing increased visitor education.

Overall, the operations of existing, expanded and new YRDP recreation facilities would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of these existing facilities.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations
Some recreation facilities at New Bullards Bar Reservoir are dependent upon the reservoir water surface elevation to remain accessible or usable by the public. These facilities include the two developed boat ramps (Dark Day and Cottage Creek) and two boat-in campgrounds (Madrone Cove and Garden Point). Notably, when reservoir water surface elevations are below the usable elevation at boat ramps, then launching boats is no longer practical. At the boat-in campgrounds, when reservoir water surface elevations are below the usable elevation, then access to the campgrounds becomes more difficult, though not impossible. There are no physical barriers preventing access to the boat-in campgrounds below the usable elevations; rather, visitor's access becomes more difficult due to terrain/shoreline conditions (e.g., steep, loose, and/or muddy conditions). There is the potential for increased use of existing neighborhood and regional parks or other recreational facilities if one or both boat ramps or boat-in campgrounds were frequently inaccessible due to reservoir operations.

Appendix 11A displays the daily median New Bullards Bar Reservoir water surface elevations compared to the functional water surface elevation of the YRDP boat ramps for the Proposed Projects compared to the Existing Condition. More specifically, Table 11.5-1 summarizes the Proposed Projects changes in the number of days (over the entire simulation period [1970-2021] and by water year type) when the reservoir water surface elevation is below the accessible or usable elevation at each of these facilities. For the boat ramps, the change in days is minimal at Dark Day and Cottage Creek Boat Ramp (less than 1 day on average per year) over the entire simulation period (1970-2021). When examining the change in the number of days by water year type, there are slightly higher occurrences in wet, dry, and critical water years at Cottage Creek Boat Ramp (between 3.0 and 11.0 additional days) and limited additional days at Dark Day Boat Ramp (less than 1 day per year on average). In Above Normal and Below Normal water years, the Proposed Projects result in fewer days (approximately 6 days per year on average) below the usable elevation at Cottage Creek Boat Ramp. Similarly, at the boat-in campgrounds, the number of additional days below the usable elevations is limited (between 0.1 and 6.5 days per year on average) with fewer days (between 3.7 and 5.8 days per year on average) in Below Normal water years for both campgrounds.

Table 11.5-1. Number of Days Below Useable Water Surface Elevation (ft) for Boat Ramps and Boat-in Campgrounds at New Bullards Bar Reservoir by water year type for the simulation period (1970-2021) for the Proposed Projects compared to the Existing Condition.

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Cottage Creek Boat Ramp (1,853 ft)	Proposed Projects	171	590	355	532	1,180	2,828
	Existing Condition	135	673	421	491	1,103	2,823
	Difference-Total (52 years)	**36**	**-83**	**-66**	**41**	**77**	**5**
	Difference-Annual (average)	**3.3**	**-5.9**	**-6.6**	**4.1**	**11.0**	**0.1**
Dark Day Boat Ramp (1,758 ft)	Proposed Projects	0	88	0	0	5	93
	Existing Condition	0	80	0	0	0	80
	Difference-Total (52 years)	**0**	**8**	**0**	**0**	**5**	**13**
	Difference-Annual (average)	**0.0**	**0.6**	**0.0**	**0.0**	**0.7**	**0.3**

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Garden Point Boat-in Campground (1,887 ft)	Proposed Projects	1,124	1,767	1,584	2,126	2,239	8,840
	Existing Condition	1,052	1,747	1,642	2,086	2,229	8,756
	Difference-Total (52 years)	**72**	**20**	**-58**	**40**	**10**	**84**
	Difference-Annual (average)	**6.5**	**1.4**	**-5.8**	**4.0**	**1.4**	**1.6**
Madrone Cove Boat-in Campground (1,905 ft)	Proposed Projects	1,508	2,441	2,285	2,771	2,490	11,495
	Existing Condition	1,437	2,432	2,322	2,736	2,489	11,416
	Difference-Total (52 years)	**71**	**9**	**-37**	**35**	**1**	**79**
	Difference-Annual (average)	**6.5**	**0.6**	**-3.7**	**3.5**	**0.1**	**1.5**

Overall, the number of additional days below the usable elevations at these facilities is not substantial enough to displace a substantial number of reservoir boaters or boat-in campers such that it would increase the use of existing neighborhood and regional parks or other recreational facilities to an extent that substantial physical deterioration of the facility would occur or be accelerated. Furthermore, there are at least four other reservoir-based recreation areas in the region (Englebright Reservoir, Scotts Flat Reservoir, Rollins Reservoir, and Lake Oroville), which provide alternative locations and facilities for displaced users. It is highly speculative as to where displaced visitors would choose to alternatively recreate, and the displaced users have numerous alternative reservoir recreation areas such that the effect would be minimized across many different locations. The alternative reservoir-based recreation areas would provide adequate available capacity to handle the displaced users from New Bullards Bar Reservoir especially if displaced users are spread across multiple other locations. As a result, changes in New Bullards Bar Reservoir elevations due to YRDP operations would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreation facilities.

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

YRDP operations have the potential to increase the number of boating days on the Middle Yuba River, particularly downstream of Our House Diversion Dam – an existing whitewater boating opportunity, which has the potential to increase use of the developed river access facility (Oregon Creek Day-use Area) at the end of the reach. This analysis examines the peak boating period - weekend days from April through June which coincides with the typical spring runoff period and when weather and temperatures (air and water) are better suited for boating compared to the winter months. Notably, under Yuba Water's Proposed Condition RR3, Yuba Water would provide up to eight weekend whitewater boating days with flows between 600 cfs and 2,000 cfs from October 1 through March 31. The number of days provided would depend upon DWR's water year forecast but would not exceed eight boating days.

As summarized in Table 11.5-2, the average number of additional boating days under the Proposed Projects compared to the Existing Condition is less than one day, on average, under most water year types (Critical, Dry, Below Normal, and Above Normal water years). The majority of additional boating days would occur in Wet water years (33.4 additional days). However, most of those additional days occur on weekdays (23.8 additional days) compared to the higher demand weekend boating days (9.5 additional days). Notably, in Wet water years, there would likely be an

abundance of other local and regional whitewater boating opportunities for boaters to choose from beyond just this Middle Yuba River reach. Thus, given the overall limited number of additional weekend boating days and the timing of most of the additional boating days during Wet and Above Normal water years as well as other boating opportunities, any resultant increase in use would likely be minimal and unlikely to result in substantial physical deterioration of the Oregon Creek Day-use Area facility.

Table 11.5-2. Average number of peak season days (April-June) in the boatable flow range (600-2,000 cfs) by water year type on the Middle Yuba River below Our House Diversion Dam for the Proposed Projects compared to the Existing Condition.

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
WEEKEND DAYS						
Proposed Projects	12.1	0.4	0.5	0.0	0.0	2.8
Existing Condition	2.5	0.2	0.1	0.0	0.0	0.6
Difference	**9.5**	**0.1**	**0.4**	**0.0**	**0.0**	**2.1**
WEEKDAY DAYS						
Proposed Projects	30.5	0.8	1.1	0.0	0.0	6.9
Existing Condition	6.7	0.6	0.6	0.0	0.0	1.7
Difference	**23.8**	**0.2**	**0.5**	**0.0**	**0.0**	**5.2**
TOTAL DAYS						
Proposed Projects	42.6	1.1	1.6	0.0	0.0	9.6
Existing Condition	9.3	0.8	0.7	0.0	0.0	2.3
Difference	**33.4**	**0.4**	**0.9**	**0.0**	**0.0**	**7.3**

Changes in Lower Yuba River Flows Due to YRDP Operations

Changes in the monthly average flows in the lower Yuba River under the Proposed Projects compared to the Existing Condition are generally not substantially different over the entire simulation period and during most months during all water year types. As such, it would not increase the use of neighborhood or regional parks providing river access and thus, would not lead to substantial physical deterioration of these facilities nor accelerate such deterioration. Furthermore, changes in the flows in the lower Yuba River due to YRDP operations could result in a reduction of river boating opportunities if flows were too low or too high to safely navigate the river or if they fall outside optimal boating flow ranges. As noted above, changes in the monthly average flows in the lower Yuba River under the Proposed Projects compared to the Existing Condition are generally not substantially different over the entire simulation period and during most months during all water year types. Additionally, there has been no definitive recreational flow ranges developed for the lower Yuba River, and it is a relatively low gradient river that does not offer high quality whitewater boating rapids or characteristics. As a result, boating opportunities would likely only decrease if use of the river were restricted due to shallow water. Since the range of flows would be within the range of lower Yuba River flows that would generally occur during the recreational use season, the recreational boating opportunities would not be expected to be substantially reduced either. Therefore, changes in lower Yuba River flows due to Proposed YRDP operations would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreation facilities.

CEQA Conclusion

Overall, none of the various changes associated with the Proposed YRDP Project (i.e., construction-related, operational, and reservoir level or flow level-related) discussed in the aforementioned analysis would substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreational facilities. Moreover, the changes would be unlikely to occur all at once such that the impact on existing recreational facilities would rise to a significant level. As a result, the impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact REC-PP-2: Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

Construction or Expansion of Recreational Facilities

The YRDP includes existing recreational facilities, and the proposed relicensing would involve the construction of new recreational facilities in the YRDP area. Regarding the existing recreational facilities, the *Recreation Facilities Plan* includes a major rehabilitation and improvement program which includes construction or alteration of all YRDP recreation facilities over the term of the new license. Both the construction work to rehabilitate and/or upgrade the existing facilities to current standards and the construction of new facilities might have a temporary or short-term adverse effect on the environment.

However, the *Recreation Facilities Plan* includes a three-step planning and implementation process: 1) preparation of a Site Plan (Design Narrative and Site Concept Plan); 2) preparation of a Site Development and Construction Plan; and 3) contracting and construction for each facility. This planning process is intended to avoid or minimize direct impacts to the physical environment, by designing the projects to avoid, mitigate, and/or minimize effects to the sensitive resources (e.g., wetlands, culturally sensitive sites, critical wildlife habitats, and sensitive botanical sites). Ultimately, Yuba Water would not commence construction until the following conditions have been met: 1) consultation with the Forest Service to ensure construction activities are coordinated with Forest Service; 2) FERC approval; and 3) all permitting has been completed.

In addition to the *Recreation Facilities Plan*, the Proposed YRDP Project would include additional management plans that would avoid, mitigate, and/or minimize effects to geology and soils and biological resources, including the *Integrated Vegetation Management Plan* and *Erosion and Sediment Control Plan*. The *Integrated Vegetation Management Plan* includes measures to manage non-native invasive plants, vegetation at project and recreation facilities, revegetation, and protections for sensitive areas. The *Erosion and Sediment Control Plan* includes measures to minimize erosion and sedimentation related to new construction and as part of routine maintenance of YRDP facilities.

As detailed in Chapter 16, Geology and Soils, the construction, maintenance, alteration, and operation of YRDP recreation facilities, roadways, and trails would include proposed ground-disturbing activities that could result in erosion or the loss of topsoil. As discussed in Chapter 16, these activities would be subject to the *Erosion and Sediment Control Plan* prepared for the YRDP facilities, which outlines specific erosion and sediment control measures including required monitoring and reporting programs to manage erosion and sedimentation at YRDP facilities. Furthermore, per the *Erosion and Sediment Control Plan*, the ground-disturbing activities

conducted during the construction and operation of the YRDP facilities would include a comprehensive set of Best Management Practices (BMPs) to control erosion. These measures are designed to minimize potential environmental impacts (e.g., preserving existing vegetation, minimizing the amount of soil exposed during construction activity, minimizing the disturbance of steep slopes, minimizing soil compaction in areas other than where the intended function of a specific area dictates that it be compacted, and reestablishing vegetation or non-vegetative erosion controls as soon as practicable) (SWRCB 2022).

In addition, proposed relicensing would include the development of several new facilities to improve river access along the Middle Yuba River downstream of Our House Diversion Dam and the mainstem Yuba River downstream of Colgate Powerhouse. These new facilities would provide developed recreational features (trails and river access improvements) that focus where recreational use and access would occur compared to the current dispersed nature of the use and access along these river stretches.

Other YRDP construction (non-recreational) facility projects, including projects to modify YRDP facilities (i.e., Our House and Log Cabin Diversion Dams Fish Release Outlets and the Lohman Ridge Diversion Tunnel Intake), would not result in recreational facility modifications.

The potential environmental impacts of construction activities associated with the YRDP recreation facilities are analyzed throughout this DEIR, and where appropriate, resource-specific mitigation measures have been adopted to address any potentially significant impacts associated with construction of the recreation facilities. YRDP recreation facility construction under the Proposed Projects would not have any other significant impacts beyond those that are already disclosed in the resource-specific impact analyses.

Operation of Existing, Expanded, and New Recreational Facilities

Unmanaged recreational use has the potential to have an adverse effect on the physical environment. The *Recreation Facilities Plan* includes a routine and operational maintenance program at the Proposed Projects recreation facilities. The program includes dedicated operating staff, inspections, requisite reservations and camping permits, recycling program, and a schedule of routine maintenance activities. In addition, the *Recreation Facilities Plan* includes recreation facility utilization monitoring elements to monitor and plan for facilities where utilization is approaching full capacity and may have the potential to accelerate the physical deterioration of recreation facilities. The monitoring program provides management actions or site development modifications to address potential adverse effects of recreation facilities that are nearing full capacity. Implementation of these operational maintenance responsibilities and the monitoring program would minimize any adverse physical impacts on the environment.

The *Recreation Facilities Plan* requires Yuba Water to conduct routine maintenance activities to keep permanent assets in an acceptable condition and compliant with their original standards. These activities typically include repairs, painting, replacement of minor parts and minor structural components. In addition, the Proposed Projects *Recreation Facilities Plan* includes a monitoring program that would identify increases in use and facility occupancy, especially as facilities approach design capacity. The monitoring program includes guidance on accommodating the increased use either through management actions or the development of additional capacity to

meet increased use and recreational demand, which would minimize or reduce the potential adverse effect on the physical environment with increased use.

The proposed YRDP relicensing would include the rehabilitation of existing recreation facilities as well as the development of new recreation facilities to meet current and future recreation demand. These facilities would be located above Englebright Dam. As with the existing facilities, Yuba Water will implement the same routine and operational maintenance and monitoring program at the YRDP recreation facilities that would avoid or minimize any potential adverse effect on the physical environment with the operation of new or expanded recreation facilities. The potential environmental impacts associated with the long-term operations of YRDP recreation facilities are analyzed throughout this DEIR, and where appropriate, resource-specific mitigation measures have been adopted to address any potentially significant impacts associated with those operations. YRDP recreation facility operations under the Proposed Projects would not have any other significant impacts beyond those that are already disclosed in the resource-specific impact analyses. Furthermore, the development of new and expanded recreation facilities would minimize the potential impact of long-term overuse at existing recreation facilities by dispersing the use and providing additional locations for recreational uses in high demand (i.e., camping, shoreline day-use, and trail use).

CEQA Conclusion

The Proposed YRDP Project includes construction and operations of new and expanded recreation facilities with potential adverse physical effects on the environment. Those environmental impacts are fully disclosed, for each relevant environmental resource, throughout this DEIR. Resource-specific mitigation measures for those impacts have been identified, as appropriate. With the implementation of the plans detailed above for the construction or expansion of recreation facilities (i.e., the *Recreation Facilities Plan, Integrated Vegetation Management Plan,* and *Erosion and Sediment Control Plan*), construction and operations of the YRDP recreational facilities under the Proposed YRDP Project would not result in any additional environmental impacts beyond those that are already disclosed in the resource-specific impact analyses in other chapters of this DEIR. As a result, this impact is **less than significant**, and no additional CEQA mitigation is required.

Narrows Impact REC-PP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

The Proposed Narrows Project does not propose substantial changes to existing operations. Thus, the Narrows Project operations would not substantially change the flows in the lower Yuba River such that it would increase recreational boating opportunities and thereby increase the use of neighborhood or regional parks. Similarly, the Narrows Project operations would not result in a reduction in the recreational boating opportunities that would displace a substantial number of boaters and therefore increase the use of other regional river access facilities. As a result, the impact would be **less than significant**, and no CEQA mitigation would be required.

11.5.2 Proposed Projects Compared to the Future Baseline

YRDP Impact REC-FPP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities
The impacts of YRDP construction are not dependent on or affected by flows and therefore would be the same, relative to the Future Baseline, as the impacts described above relative to the Existing Condition. For the same reasons explained above for YRDP Impact REC-PP-1, YRDP construction activities under the Proposed Projects would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Operation of Existing, Expanded, and New Recreational Facilities
The impacts of non-flow YRDP operations relative to the Future Baseline are not dependent on or affected by flows and therefore would be the same, relative to the Future Baseline, as the impacts described above relative to the Existing Condition. For the same reasons explained above for YRDP Impact REC-PP-1, operations of existing, expanded and new YRDP recreation facilities would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of these existing facilities.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations
Impacts of Proposed YRDP operations relative to the Future Baseline would be similar to the impacts described above relative to the Existing Condition. Access to the YRDP boat ramps and boat-in campgrounds would result in nominal changes in the number of days below the usable elevations (Table 11.5-3). The nominal changes in access to boat ramps and boat-in campgrounds is not substantial enough to displace a substantial number of reservoir boaters or boat-in campers such that it would increase the use of existing neighborhood and regional parks or other recreational facilities to an extent that substantial physical deterioration of the facility would occur or be accelerated. Furthermore, there are at least four other reservoir-based recreation areas in the region (Englebright Reservoir, Scotts Flat Reservoir, Rollins Reservoir, and Lake Oroville), which provide alternative locations and facilities for displaced users. It is highly speculative as to where displaced visitors would choose to alternatively recreate and the displaced users have numerous alternative reservoir recreation areas such that the effect would be minimized across many different locations. The alternative reservoir-based recreation areas would provide adequate available capacity to handle the displaced users from New Bullards Bar Reservoir especially if displaced users are spread across multiple other locations. As a result, changes in New Bullards Bar Reservoir elevations due to YRDP operations would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreation facilities.

Table 11.5-3. Number of Days Below Useable Water Surface Elevation (ft) for Boat Ramps and Boat-in Campgrounds at New Bullards Bar Reservoir by water year type for the simulation period (1970-2021) for the Proposed Projects compared to the Future Baseline.

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Cottage Creek Boat Ramp (1,853 ft)	Proposed Projects	100	630	262	425	1,036	2,453
	Future Baseline	100	581	276	351	1,006	2,314
	Difference-Total (52 years)	**0**	**49**	**-14**	**74**	**30**	**139**
	Difference-Annual (average)	**0.0**	**3.5**	**-1.4**	**7.4**	**4.3**	**2.7**

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Dark Day Boat Ramp (1,758 ft)	Proposed Projects	0	0	0	0	0	0
	Future Baseline	0	0	0	0	0	0
	Difference-Total (52 years)	**0**	**0**	**0**	**0**	**0**	**0**
	Difference-Annual (average)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Garden Point Boat-in Campground (1,887 ft)	Proposed Projects	1,112	1,764	1,605	2,046	2,193	8,720
	Future Baseline	1,030	1,711	1,570	1,952	2,185	8,448
	Difference-Total (52 years)	**82**	**53**	**35**	**94**	**8**	**272**
	Difference-Annual (average)	**7.5**	**3.8**	**3.5**	**9.4**	**1.1**	**5.2**
Madrone Cove Boat-in Campground (1,905 ft)	Proposed Projects	1,488	2,424	2,288	2,708	2,413	11,321
	Future Baseline	1,429	2,395	2,277	2,647	2,397	11,145
	Difference-Total (52 years)	**59**	**29**	**11**	**61**	**16**	**176**
	Difference-Annual (average)	**5.4**	**2.1**	**1.1**	**6.1**	**2.3**	**3.4**

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

Impacts of YRDP operations relative to the Future Baseline would be similar to the impacts relative to the Existing Condition. As summarized in Table 11.5-4, the average number of additional boating days under the Proposed Projects compared to the Future Baseline is less than one day, on average, under most water year types (Critical, Dry, Below Normal, and Above Normal water years). The majority of additional boating days would occur in Wet water years (34.7 additional days). However, most of those additional days occur on weekdays (25.1 additional days) compared to the higher demand weekend boating days (9.6 additional days). Notably, in Wet water years, there would likely be an abundance of other local and regional whitewater boating opportunities for boaters to choose from beyond just this Middle Yuba River reach. Thus, given the overall limited number of additional weekend boating days and the timing of most of the additional boating days during Wet and Above Normal water years as well as other boating opportunities, any resultant increase in use would likely be minimal and unlikely to result in substantial physical deterioration of the Oregon Creek Day-use Area facility.

Table 11.5-4. Average number of peak season days (April-June) in the boatable flow range (600-2,000 cfs) by water year type on the Middle Yuba River below Our House Diversion Dam for the Proposed Projects compared to the Future Baseline.

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
WEEKEND DAYS						
Proposed Projects	12.0	0.2	0.2	0.0	0.0	2.6
Future Baseline	2.4	0.1	0.1	0.0	0.0	0.5
Difference	**9.6**	**0.1**	**0.1**	**0.0**	**0.0**	**2.1**
WEEKDAY DAYS						
Proposed Projects	31.9	0.6	1.0	0.0	0.0	7.1
Future Baseline	6.8	0.4	0.4	0.0	0.0	1.6
Difference	**25.1**	**0.1**	**0.6**	**0.0**	**0.0**	**5.5**

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
TOTAL DAYS						
Proposed Projects	43.9	0.8	1.2	0.0	0.0	9.7
Future Baseline	9.2	0.5	0.5	0.0	0.0	2.2
Difference	**34.7**	**0.3**	**0.7**	**0.0**	**0.0**	**7.6**

Changes in Lower Yuba River Flows Due to YRDP Operations

Impacts of YRDP operations relative to the Future Baseline would be similar to the impacts relative to the Existing Condition. Changes in the monthly average flows in the lower Yuba River are generally not substantially different over the entire simulation period. As such, it would not increase the use of neighborhood or regional parks providing river access and thus, would not lead to substantial physical deterioration of these facilities nor accelerate such deterioration. Similarly, as discussed above relative to the Existing Condition, the recreational boating opportunities would not be expected to be substantially reduced such that it would displace boaters to other regional river reaches such that it would increase the use of other regional river access facilities.

CEQA Conclusion

Overall, none of the various changes associated with the Proposed YRDP Project (i.e., construction-related, operational, and reservoir level or flow level-related) discussed in the aforementioned analysis would substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreational facilities. Moreover, the changes would be unlikely to occur all at once such that the impact on existing recreational facilities would rise to a significant level. As a result, the impacts would be **less than significant**, and no CEQA mitigation would be required.

Narrows Impact REC-FPP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

The Proposed Narrows Project operations would not substantially change the flows in the lower Yuba River relative to the Future Baseline such that it would increase recreational boating opportunities and thereby increase the use of neighborhood or regional parks. Similarly, the Narrows Project operations would not result in a reduction in the recreational boating opportunities that would displace a substantial number of boaters and therefore increase the use of other regional river access facilities. As a result, the impact would be **less than significant**, and no CEQA mitigation would be required.

11.5.3 Alternative 1 Compared to the Existing Condition

As described in Chapter 4, this DEIR evaluates the potential flow-related impacts of Alternative 1 relative to the Existing Condition for informational purposes only. Because this comparison is potentially misleading for flow-related impacts, as explained in Chapter 4, the DEIR does not use the Existing Condition scenario to draw significance conclusions for these impacts. The analyses of potential flow-related impacts for Alternative 1 are based on the comparison between Alternative 1 and the Future Baseline (see Section 11.5.4 below).

YRDP Impact REC-Alt1-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects. Thus, impacts of YRDP construction related to recreation facilities and other non-recreational construction projects under Alternative 1 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, YRDP construction under Alternative 1 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Operation of Existing, Expanded, and New Recreational Facilities

Non-flow operations and maintenance activities under Alternative 1 would be the same as those under the Proposed Projects. Thus, impacts of YRDP non-flow operations related to recreation facilities under Alternative 1 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, operation of existing, expanded, and new YRDP recreational facilities under Alternative 1 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations

Some recreation facilities at New Bullards Bar Reservoir are dependent upon the reservoir water surface elevation to remain accessible or usable by the public, including Dark Day and Cottage Creek boat ramps and Madrone Cove and Garden Point boat-in campgrounds. If the operations under Alternative 1 resulted in a substantial number of additional days when these facilities were inaccessible (i.e., reservoir elevation is below the usable elevation), then Alternative 1 would have the potential to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Appendix 11A displays the daily median New Bullards Bar Reservoir water surface elevations compared to the functional water surface elevation of the YRDP boat ramps for Alternative 1. More specifically, Table 11.5-5 summarizes the Alternative 1 changes in the number of days (over the entire simulation period [1970-2021] and by water year type) when the reservoir water surface elevation is below the accessible or usable elevation at each of these facilities under Alternative 1. For Dark Day and Cottage Creek boat ramps, there is either no change in the number days below the usable elevations or fewer days below the usable elevations for Alternative 1.

Table 11.5-5. Number of Days Below Useable Water Surface Elevation (ft) for Boat Ramps and Boat-in Campgrounds at New Bullards Bar Reservoir by water year type for the simulation period (1970-2021) for Alternative 1 compared to the Existing Condition.

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Cottage Creek Boat Ramp (1,853 ft)	Alternative 1	100	631	303	479	1,061	2,574
	Existing Condition	135	673	421	491	1,103	2,823
	Difference-Total (52 years)	**-35**	**-42**	**-118**	**-12**	**-42**	**-249**
	Difference-Annual (average)	**-3.2**	**-3.0**	**-11.8**	**-1.2**	**-6.0**	**-4.8**
Dark Day Boat Ramp (1,758 ft)	Alternative 1	0	0	0	0	0	0
	Existing Condition	0	80	0	0	0	80
	Difference-Total (52 years)	**0**	**-80**	**0**	**0**	**0**	**-80**
	Difference-Annual (average)	**0.0**	**-5.7**	**0.0**	**0.0**	**0.0**	**-1.5**
Garden Point Boat-in Campground (1,887 ft)	Alternative 1	1,117	1,766	1,608	2,037	2,174	8,702
	Existing Condition	1,052	1,747	1,642	2,086	2,229	8,756
	Difference-Total (52 years)	**65**	**19**	**-34**	**-49**	**-55**	**-54**
	Difference-Annual (average)	**5.9**	**1.4**	**-3.4**	**-4.9**	**-7.9**	**-1.0**
Madrone Cove Boat-in Campground (1,905 ft)	Alternative 1	1,494	2,428	2,291	2,683	2,371	11,267
	Existing Condition	1,437	2,432	2,322	2,736	2,489	11,416
	Difference-Total (52 years)	**57**	**-4**	**-31**	**-53**	**-118**	**-149**
	Difference-Annual (average)	**5.2**	**-0.3**	**-3.1**	**-5.3**	**-16.9**	**-2.9**

Overall, at the boat-in campgrounds, the number of additional days below the usable elevations at these facilities is fewer in most water year types under Alternative 1. In select water year types, the number of days below the usable elevations is higher though not substantially higher for Alternative 1, including in Wet (5.1 days per year on average) and Above Normal (1.5 days per year on average) at Garden Point Boat-in Campground and Wet water years (4.8 days per year on average) at Madrone Cove Boat-in Campground. Overall, the changes are not substantial enough to displace a substantial number of reservoir boaters or boat-in campers such that it would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Furthermore, there are at least four other reservoir-based recreation areas in the region (Englebright Reservoir, Scotts Flat Reservoir, Rollins Reservoir, and Lake Oroville), which provide alternative locations and facilities for displaced users. It is highly speculative as to where displaced visitors would choose to alternatively recreate and the displaced users have numerous alternative reservoir recreation areas such that the effect would be minimized across many different locations. The total available capacity at alternative locations would have adequate capacity to handle displaced users at New Bullards Bar Reservoir.

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

Alternative 1 YRDP operations have the potential to increase the number of boating days during the peak boating season (April-June) on the Middle Yuba River below Our House Diversion Dam – an existing whitewater boating opportunity, which may result in the deterioration of river access facilities, namely the Oregon Creek Day-use Area at the end of the reach.

As summarized in Table 11.5-6, the average number of additional boating days under Alternative 1 compared to the Existing Condition is less than two days, on average, under most water year types (Critical, Dry, Below Normal, and Above Normal water years). The majority of additional boating days would occur in Wet water years (34.6 additional days). However, most of those additional days occur on weekdays (25.2 additional days) compared to the higher demand weekend boating days (9.5 additional days). Notably, in Wet water years, there would likely be an abundance of other local and regional whitewater boating opportunities for boaters to choose from beyond just this Middle Yuba River reach. Thus, given the overall low number of additional weekend boating days and the timing of most of the additional boating days during Wet and Above Normal water years, any resultant increase in use would not result in substantial physical deterioration of the facility.

Table 11.5-6. Average number of peak season days (April-June) in the boatable flow range (600-2,000 cfs) by water year type on the Middle Yuba River below Our House Diversion Dam for Alternative 1 compared to the Existing Condition.

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
WEEKEND DAYS						
Alternative 1	12.0	0.2	0.2	0.0	0.0	2.6
Existing Condition	2.5	0.2	0.1	0.0	0.0	0.6
Difference	**9.5**	**0.0**	**0.1**	**0.0**	**0.0**	**2.0**
WEEKDAY DAYS						
Alternative 1	31.9	0.6	1.0	0.0	0.0	7.1
Existing Condition	6.7	0.6	0.6	0.0	0.0	1.7
Difference	**25.2**	**0.0**	**0.4**	**0.0**	**0.0**	**5.4**
TOTAL DAYS						
Alternative 1	43.9	0.8	1.2	0.0	0.0	9.7
Existing Condition	9.3	0.8	0.7	0.0	0.0	2.3
Difference	**34.6**	**0.0**	**0.5**	**0.0**	**0.0**	**7.4**

Changes in Lower Yuba River Flows Due to YRDP Operations

Changes in the monthly average flows in the lower Yuba River under Alternative 1 compared to the Existing Condition are generally not substantially different over the entire simulation period and during most months during all water year types. As such, it would not increase the use of neighborhood or regional parks providing river access and thus, would not lead to substantial physical deterioration of these facilities nor accelerate such deterioration. Furthermore, changes in the flows in the lower Yuba River due to YRDP operations could result in a reduction of river boating opportunities if flows were too low or too high to safely navigate the river or if they fall outside optimal boating flow ranges. Similar to the Proposed Projects, changes in the monthly average flows in the lower Yuba River under Alternative 1 compared to the Existing Condition are generally not substantially different over the entire simulation period and during most months during all water year types. Additionally, there are no optimal recreational flow ranges for the lower Yuba River, and it is a relatively low gradient river that does not offer high quality whitewater boating rapids or characteristics. As a result, boating opportunities would likely only decrease if use of the river were restricted due to shallow water. Since the range of flows would be within the range of lower Yuba River flows that would generally occur during the recreational

use season, the recreational boating opportunities would not be expected to be substantially reduced.

YRDP Impact REC-Alt1-2: Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

YRDP construction activities and non-flow operations and maintenance of YRDP recreational facilities under Alternative 1 would be the same as under the Proposed Projects, and therefore would have the same associated impacts. For the same reasons described above for YRDP Impact REC-PP-2, construction and operations of the YRDP recreational facilities under Alternative 1 would not result in any additional environmental impacts beyond those that are already disclosed in the resource-specific impact analyses in other chapters of this DEIR. Therefore, the impact would be **less than significant**.

Narrows Impact REC-Alt1-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Narrows Project operations under Alternative 1 would not substantially change the flows in the lower Yuba River and therefore would not increase recreational uses on the lower Yuba River or other regional rivers.

Indirect Impact REC-Alt1-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated due to YB/DS operations under Alternative 1

Alternative 1 includes Yuba-Bear/Drum-Spaulding 4(e) conditions and the 15.6 TAF of water provided by the Yuba-Bear/Drum-Spaulding projects. Yuba-Bear/Drum-Spaulding 4(e) conditions change flows in Yuba-Bear/Drum-Spaulding reaches year-round relative to the Existing Condition. However, the intent of Alternative 1 is only to provide the 15.6 TAF of water during April-May of Dry and Critical WYs. Consequently, the programmatic evaluation of potential impacts to recreation (i.e., boat ramp access and changes in river boating) in Yuba-Bear/Drum-Spaulding reservoirs and reaches upstream of the YRDP under Alternative 1 relative to the Existing Condition focuses on changes that could occur during Dry and Critical WYs.

Changes in Reservoir Water Surface Elevations

Implementation of the flow actions under Alternative 1 compared to Existing Conditions would have the potential to have indirect impacts on the availability of the Yuba-Bear and Drum-Spaulding projects boat ramps during the peak recreation season (May through September) in Dry and Critical water years due to potential changes in reservoir storage and thus, reservoir water surface elevations at these reservoirs. This impact would occur at the two reservoirs, Jackson Meadows Reservoir and Lake Spaulding, with developed boat ramps and where reservoir boating is a popular recreational activity. The other Yuba-Bear/Drum-Spaulding reservoirs in the upper watershed (Fordyce Lake and Bowman Lake) do not have developed boat ramp facilities and reservoir boating is less popular or limited to cartop launching from the shoreline. Jackson Meadows Reservoir provides two developed boat ramp facilities (Pass Creek and Woodcamp boat ramps), and Lake Spaulding has a single boat ramp (Lake Spaulding boat ramp). At Jackson Meadows Reservoir, one of the two boat launch ramps (Pass Creek boat ramp) is available through September 15 in Dry water years and only through July 1 in Critically Dry water years (NID 2011).

However, NID, in its new license Recreation Plan, proposes to extend/provide low-water boat launching access at the Pass Creek boat ramp at Jackson Meadows Reservoir until September 30 in Critically Dry water year types (NID 2011). At Lake Spaulding, the boat ramp is available from May 1 through September 30 in all water year types except Critically Dry water years when the ramp is not usable during any period (PG&E 2011).

YB/DS operations under Alternative 1 could reduce the availability of these boat ramps if water is taken from reservoir storage, however, NID's proposal to extend/provide low-water boat launching access at Jackson Meadows Reservoir until September 30 in Critically Dry water year types would minimize or potentially avoid any impacts to other boat ramp facilities that might otherwise occur from decreased boat ramp availability and subsequent displaced users. The boat ramp at Lake Spaulding would be available through September 30 in Dry water years and is already not available for the entire season in Critically Dry water years.

Moreover, there are many other recreational areas and opportunities in the area with sufficient capacity for displaced users to alternatively visit that would minimize impacts on any one facility or recreational area, though where and how displaced visitors will change their recreational use is highly speculative. As a result of the combination of these factors (ample other opportunities and the speculative nature of displaced visitor behavior), it is unlikely that changes in reservoir levels from Alternative 1 YB/DS operations would result in an increase in use of other area/regional reservoir boat ramp facilities that could result in substantial physical deterioration of those facilities.

Changes in Middle and South Yuba River Boating Opportunities

Increases in flow under Alternative 1 relative to the Existing Condition would be expected to result in an increase in flows in the notable whitewater boating reaches of the Middle Yuba and South Yuba rivers (i.e., below Milton Diversion Dam and below Lake Spaulding Dam). The typical boating season on these reaches is the spring run-off period between March and May.

On the Middle Yuba River, the upstream reach (Milton Diversion Dam to Plumbago) is typically boatable in April and May, however, access to the reach during that timeframe is generally not possible due to snowpack (NID 2011). The downstream reach (Plumbago to Our House Diversion Dam) is boatable and accessible (though the put-in is difficult) in April and May with a broad range of boatable flows from 250 cfs to 1,200 cfs (inflatable kayaks at the lower end and hardshell kayaks and rafts at the upper end) (NID 2011). This reach is similar to other boating reaches in the region, particularly several South Yuba River reaches (Washington to Edwards Crossing and Edwards Crossing to Purdon Crossing); however, the put-in access difficulties and the shuttle length make this reach slightly less desirable compared to the other South Yuba River reaches (NID 2011). The increases in flows in the Middle Yuba River as part of Alternative 1 YB/DS operations could provide additional boating opportunities but also reduced boating opportunities depending upon how much additional flow is provided and if it falls within the boatable flow range for the downstream reach. However, whitewater boating use on these reaches is not substantial such that slight increases in use or reduced use would displace a substantial number of boaters that would lead to physical deterioration of other river access facilities.

On the South Yuba River, the upstream reach (Langs Crossing to Jolly Boys Mine) is generally boatable during April and May, however the flows can only be provided on this reach when Lake

Spaulding is spilling, which typically only occurs in Wet and Above Normal water years (PG&E 2011). The next boating reach is from Jolly Boys Mine to Golden Quartz, which is a short reach with limited whitewater quality, difficult access, and flow information is not readily available (PG&E 2011). As such, the reach has limited boating demand particularly compared to the other reaches downstream on the South Yuba River. The Golden Quartz to Washington reach is also a short boating reach with some quality whitewater though accretion from tributaries starts to influence the flows in this reach more so than the Yuba-Bear/Drum-Spaulding reaches. Further, the reaches downstream provide similar opportunities but for longer stretches and with higher quality whitewater boating such that this reach is generally a lower quality, less utilized reach (PG&E 2011). As noted earlier, the flows in the South Yuba River reaches downstream of Washington are largely influenced by accretion from numerous tributaries and minimally by the Yuba-Bear/Drum-Spaulding projects and the Alternative 1 operations. Thus, YB/DS operations under Alternative 1 would be unlikely to substantially affect the use or degradation of existing recreation facilities due to changes in flows in these reaches.

11.5.4 Alternative 1 Compared to the Future Baseline.

YRDP Impact REC-FAlt1-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects, and impacts of construction activities are not dependent on or affected by flows. Thus, impacts of YRDP construction under Alternative 1 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, YRDP construction under Alternative 1 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Operation of Existing, Expanded, and New Recreational Facilities

Non-flow operations and maintenance activities under Alternative 1 would be the same as those under the Proposed Projects, and associated impacts are not dependent on or affected by flows. Thus, impacts of YRDP non-flow operations related to recreation facilities under Alternative 1 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, operation of existing, expanded, and new YRDP recreational facilities under Alternative 1 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations

Reservoir elevation-dependent recreation facilities at New Bullards Bar Reservoir (Dark Day and Cottage Creek boat ramps and Madrone Cove and Garden Point boat-in campgrounds) may be inaccessible at a higher frequency under Alternative 1 operations, which could have the potential to increase the use of existing neighborhood and regional parks or other recreational facilities.

Appendix 11A displays the daily median New Bullards Bar Reservoir water surface elevations compared to the functional water surface elevation of the YRDP boat ramps for Alternative 1

compared to the Future Baseline. More specifically, Table 11.5-7 summarizes the Alternative 1changes in the number of days (over the entire simulation period [1970-2021] and by water year type) when the reservoir water surface elevation is below the accessible or usable elevation at each of these facilities under Alternative 1. For the boat ramps, the change in days is not substantial for Alternative 1 compared to the Future Baseline at Cottage Creek Boat Ramp (5.0 days on average per year) over the entire simulation period (1970-2021). There is no change in the number of days below the usable elevations at Dark Day Boat Ramp. When examining the change in the number of days by water year type at Cottage Creek Boat Ramp, there is a slightly higher number of days below the usable elevations in Dry water years at Cottage Creek Boat Ramp (12.8 additional days) as compared to the rest of the water year types (between 0 and 7.9 additional days per year on average).

Table 11.5-7. Number of Days Below Useable Water Surface Elevation (ft) for Boat Ramps and Boat-in Campgrounds at New Bullards Bar Reservoir by water year type for the simulation period (1970-2021) for Alternative 1 compared to the Future Baseline.

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Cottage Creek Boat Ramp (1,853 ft)	Alternative 1	100	631	303	479	1,061	2,574
	Future Baseline	100	581	276	351	1,006	2,314
	Difference-Total (52 years)	**0**	**50**	**27**	**128**	**55**	**260**
	Difference-Annual (average)	**0.0**	**3.6**	**2.7**	**12.8**	**7.9**	**5.0**
Dark Day Boat Ramp (1,758 ft)	Alternative 1	0	0	0	0	0	0
	Future Baseline	0	0	0	0	0	0
	Difference-Total (52 years)	**0**	**0**	**0**	**0**	**0**	**0**
	Difference-Annual (average)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Garden Point Boat-in Campground (1,887 ft)	Alternative 1	1,117	1,766	1,608	2,037	2,174	8,702
	Future Baseline	1,030	1,711	1,570	1,952	2,185	8,448
	Difference-Total (52 years)	**87**	**55**	**38**	**85**	**-11**	**254**
	Difference-Annual (average)	**7.9**	**3.9**	**3.8**	**8.5**	**-1.6**	**4.9**
Madrone Cove Boat-in Campground (1,905 ft)	Alternative 1	1,494	2,428	2,291	2,683	2,371	11,267
	Future Baseline	1,429	2,395	2,277	2,647	2,397	11,145
	Difference-Total (52 years)	**65**	**33**	**14**	**36**	**-26**	**122**
	Difference-Annual (average)	**5.9**	**2.4**	**1.4**	**3.6**	**-3.7**	**2.3**

Similarly, at the boat-in campgrounds, the number of additional days below the usable elevations is limited (between 1.4 and 8.5 days per year on average) in Wet, Above Normal, Below Normal, and Dry water years. In contrast, there are fewer days below the usable elevations in Critical water years (between 1.6 and 3.7 fewer days per year on average). Overall, the number of additional days below the usable elevations at these facilities is not substantial enough to displace a substantial number of reservoir boaters or boat-in campers such that it would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Furthermore, there are at least four other reservoir-based recreation areas in the region (Englebright Reservoir, Scotts Flat Reservoir, Rollins Reservoir, and Lake Oroville), which provide alternative locations and facilities for displaced users. It is highly speculative as to where displaced visitors would choose to

alternatively recreate and the displaced users have numerous alternative reservoir recreation areas such that the effect would be minimized across many different locations. The total available capacity at alternative locations would have adequate capacity to handle displaced users at New Bullards Bar Reservoir.

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

Relative to the Future Baseline, Alternative 1 YRDP operations have the potential to increase the number of boating days on the Middle Yuba River, particularly downstream of Our House Diversion Dam – an existing whitewater boating opportunity, which may result in the deterioration of the developed river access facility (Oregon Creek Day-use Area) at the end of the reach. As summarized in Table 11.5-8, the average number of additional boating days under Alternative 1 compared to the Future Baseline is less than one day, on average, under most water year types (Critical, Dry, Below Normal, and Above Normal water years). The majority of additional boating days would occur in Wet water years (34.7 additional days). However, most of those additional days occur on weekdays (25.1 additional days) compared to the higher demand weekend boating days (9.6 additional days). Notably, in Wet water years, there would likely be an abundance of other local and regional whitewater boating opportunities for boaters to choose from beyond just this Middle Yuba River reach. Given the low number of additional weekend boating days from April through June and the timing of when most of these additional days occur (Wet water years), any resultant increase in use would not result in substantial physical deterioration of the Oregon Creek Day-use Area facility.

Table 11.5-8. Average number of peak season days (April-June) in the boatable flow range (600-2,000 cfs) by water year type on the Middle Yuba River below Our House Diversion Dam for Alternative 1 compared to the Future Baseline.

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
WEEKEND DAYS						
Alternative 1	12.0	0.2	0.2	0.0	0.0	2.6
Future Baseline	2.4	0.1	0.1	0.0	0.0	0.5
Difference	**9.6**	**0.1**	**0.1**	**0.0**	**0.0**	**2.1**
WEEKDAY DAYS						
Alternative 1	31.9	0.6	1.0	0.0	0.0	7.1
Future Baseline	6.8	0.4	0.4	0.0	0.0	1.6
Difference	**25.1**	**0.1**	**0.6**	**0.0**	**0.0**	**5.5**
TOTAL DAYS						
Alternative 1	43.9	0.8	1.2	0.0	0.0	9.7
Future Baseline	9.2	0.5	0.5	0.0	0.0	2.2
Difference	**34.7**	**0.3**	**0.7**	**0.0**	**0.0**	**7.6**

Changes in Lower Yuba River Flows Due to YRDP Operations

Changes in the monthly average flows in the lower Yuba River under Alternative 1 compared to the Future Baseline are generally not substantially different over the entire simulation period and during most months during all water year types. The exceptions are primarily September through

December when flows are higher during Dry and Critical WYs though much of this period is not typical peak boating months on the lower Yuba River. As such, it would not increase the use of neighborhood or regional parks providing river access and thus, would not lead to substantial physical deterioration of these facilities nor accelerate such deterioration.

Furthermore, since there is no definitive recreational flow range on the lower Yuba River, the changes in flow would also not result in a reduction in boating use on the lower Yuba River that could lead to displaced users that would increase the use of other regional river boating access facilities beyond the lower Yuba River.

CEQA Conclusion

Overall, none of the various changes associated with the YRDP under Alternative 1 (i.e., construction-related, operational, and reservoir level or flow level-related) discussed in the aforementioned analysis would substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreational facilities. Moreover, the changes would be unlikely to occur all at once such that the impact on existing recreational facilities would rise to a significant level. As a result, the impacts would be **less than significant**.

Narrows Impact REC-FAlt1-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Narrows Project operations under Alternative 1 would not substantially change the flows in the lower Yuba River and therefore would not increase recreational uses on the lower Yuba River or other regional rivers. As a result, the impact would be **less than significant**.

Indirect Impact REC-FAlt1-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated due to YB/DS operations under Alternative 1

YB/DS operations under Alternative 1 could have an indirect impact on boat ramp availability at Jackson Meadows Reservoir and Lake Spaulding, as well as an increase river boating use on the Middle Yuba and South Yuba rivers.

Alternative 1 includes Yuba-Bear/Drum-Spaulding 4(e) conditions and the 15.6 TAF of water provided by the Yuba-Bear/Drum-Spaulding projects. However, the intent of Alternative 1 is only to provide the 15.6 TAF of water during April-May of Dry and Critical WYs. Consequently, the programmatic evaluation of potential impacts to recreation (i.e., boat ramp access and changes in river boating) in Yuba-Bear/Drum-Spaulding reservoirs and reaches upstream of the YRDP under Alternative 1 relative to the Future Baseline focuses on changes that could occur during Dry and Critical WYs.

Changes in Reservoir Water Surface Elevations

Relative to the Future Baseline, YB/DS operations under Alternative 1 could reduce the availability of the Yuba-Bear and Drum-Spaulding projects boat ramps during the peak recreation season (May through September) in Dry and Critical water years due to potential changes in reservoir storage and thus, reservoir water surface elevations at these reservoirs. This could occur at the two reservoirs, Jackson Meadows Reservoir and Lake Spaulding, with developed boat ramps and where reservoir boating is a popular recreational activity. However, in its new license

Recreation Plan, NID proposes to extend/provide low-water boat launching access at the Pass Creek boat ramp at Jackson Meadows Reservoir, which would minimize and potentially avoid any impacts to other boat ramp facilities that might otherwise occur from decreased boat ramp availability and subsequent displaced users. Further, Alternative 1 YB/DS operations would have limited effects on the lone Lake Spaulding boat ramp because that ramp is already not available in Critically Dry water years, and the 15.6 TAF flow contribution under Alternative 1 would only occur in Dry and Critical water years. Moreover, there are many other recreational areas and opportunities in the area with sufficient capacity for displaced users to alternatively visit that would minimize impacts on any one facility or recreational area, though where and how displaced visitors will change their recreational use is highly speculative. As a result of the combination of these factors (ample other opportunities and the speculative nature of displaced visitor behavior), it is unlikely that changes in reservoir levels from Alternative 1 YB/DS operations would result in an increase in use of other area/regional reservoir boat ramp facilities that could result in substantial physical deterioration of those facilities compared to the Future Baseline.

Changes in Middle and South Yuba River Boating Opportunities

Relative to the Future Baseline, YB/DS operations under Alternative 1 would not substantially affect flows in the whitewater boating reaches on the Middle Yuba and South Yuba rivers. The Middle Yuba River reaches are either not accessible in April and May (Milton Diversion Dam to Plumbago reach) or there is minimal demand for the reaches due to put-in access difficulties, lengthy vehicle shuttles, and the availability of other higher quality options in the region (Plumbago to Our House Diversion Dam). The South Yuba River reaches are generally more easily accessed however, the reaches are typically not boatable in Dry and Critically Dry water years due to the need for spills (Langs Crossing to Jolly Boys Mine reach), very short with limited quality whitewater (Jolly Boys Mine to Golden Quartz reach), or short with better quality and longer whitewater reaches downstream (Golden Quartz to Washington reach). Overall, the whitewater boating use on these reaches is not substantial. Thus, changes in flows due to YB/DS operations under Alternative 1 would not substantially increase the use or accelerate the deterioration of existing river access reaches.

CEQA Conclusion

Overall, changes resulting from YB/DS operations under Alternative 1 (i.e., reservoir level and flows) would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreation facilities. Given the minimal existing use of boating reaches, NID's proposal to provide expanded boat launching access, and the availability of other nearby recreation sites with available capacity to accommodate displaced users, the indirect impact on existing recreational facilities is not expected to rise to a significant level. As a result, this impact would be **less than significant**.

11.5.5 Alternative 2 Compared to the Existing Condition

As described in Chapter 4, this DEIR evaluates the potential flow-related impacts of Alternative 2 relative to the Existing Condition for informational purposes only. Because this comparison is potentially misleading for flow-related impacts, as explained in Chapter 4, the DEIR does not use the Existing Condition scenario to draw significant conclusions for these impacts. The analyses of potential flow-related impacts for Alternative 2 are based on the comparison between Alternative 2 and the Future Baseline.

YRDP Impact REC-Alt2-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities

YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects. Thus, impacts of YRDP construction related to recreation facilities and other non-recreational construction projects under Alternative 2 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, YRDP construction under Alternative 2 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Operation of Existing, Expanded, and New Recreational Facilities

Non-flow operations and maintenance activities under Alternative 2 would be the same as those under the Proposed Projects. Thus, impacts of YRDP non-flow operations related to recreation facilities under Alternative 2 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, operation of existing, expanded, and new YRDP recreational facilities under Alternative 2 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations

Some recreation facilities at New Bullards Bar Reservoir are dependent upon the reservoir water surface elevation to remain accessible or usable by the public, including Dark Day and Cottage Creek boat ramps and Madrone Cove and Garden Point boat-in campgrounds. If the operations under Alternative 2 resulted in a substantial number of additional days when these facilities were inaccessible (i.e., reservoir elevation is below the usable elevation), then Alternative 2 would have the potential to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Appendix 11A displays the daily median New Bullards Bar Reservoir water surface elevations compared to the functional water surface elevation of the YRDP boat ramps for Alternative 2. More specifically, Table 11.5-9 summarizes the Alternative 2 changes in the number of days (over the entire simulation period [1970-2021] and by water year type) when the reservoir water surface elevation is below the accessible or usable elevation at each of these facilities under Alternative 2. For Dark Day Boat Ramp, there is no change in the number of days below the usable elevations for Alternative 2. For Cottage Creek Boat Ramp, the number of additional days below the usable elevations is substantial with an average of 42 additional days over the entire period (1970-2021), but particularly in Dry (116 additional days) and Critical (95 additional days) water years. At Madrone Cove and Garden Point boat-in campgrounds, the number of additional days below the usable elevations is substantial with an average of 47 and 50 additional days, respectively, over the entire period with as many as 75 additional days at Madrone Cove and 96 additional days at Garden Point in Dry water years. Overall, the number of additional days below the usable elevations at these facilities is substantially greater in most water year types under Alternative 2 except at Dark Day Boat Ramp.

Table 11.5-9. Number of Days Below Useable Water Surface Elevation (ft) for Boat Ramps and Boat-in Campgrounds at New Bullards Bar Reservoir by water year type for the simulation period (1970-2021) for Alternative 2 compared to the Existing Condition.

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Cottage Creek Boat Ramp (1,853 ft)	Alternative 2	228	647	706	1,652	1,767	5,000
	Existing Condition	135	669	421	491	1,103	2,819
	Difference-Total (52 years)	**93**	**-22**	**285**	**1161**	**664**	**2181**
	Difference-Annual (average)	**8**	**-2**	**29**	**116**	**95**	**42**
Dark Day Boat Ramp (1,758 ft)	Alternative 2	0	80	0	0	0	80
	Existing Condition	0	80	0	0	0	80
	Difference-Total (52 years)	**0**	**0**	**0**	**0**	**0**	**0**
	Difference-Annual (average)	**0**	**0**	**0**	**0**	**0**	**0**
Garden Point Boat-in Campground (1,887 ft)	Alternative 2	1,310	2,271	2,265	3,044	2,469	11,359
	Existing Condition	1,052	1,743	1,642	2,086	2,229	8,752
	Difference-Total (52 years)	**258**	**528**	**623**	**958**	**240**	**2607**
	Difference-Annual (average)	**23**	**38**	**62**	**96**	**34**	**50**
Madrone Cove Boat-in Campground (1,905 ft)	Alternative 2	1,870	3,009	2,937	3,482	2,556	13,854
	Existing Condition	1,437	2,428	2,322	2,736	2,489	11,412
	Difference-Total (52 years)	**433**	**581**	**615**	**746**	**67**	**2,442**
	Difference-Annual (average)	**39**	**42**	**62**	**75**	**10**	**47**

Overall, the changes are substantial enough such that operation of Alternative 2 may result in a substantial number of displaced boaters and boat-in campers for much or all of the recreation season that it would result in an increase in use of either other boat ramps or boat-in campgrounds at New Bullards Bar Reservoir or potentially at other existing neighborhood and regional parks; and therefore substantial physical deterioration of those facilities could occur or be accelerated.

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

Alternative 2 operations have the potential to increase the number of boating days during the peak boating season (April-June) on the Middle Yuba River below Our House Diversion Dam – an existing whitewater boating opportunity, which may result in the deterioration of river access facilities, namely the Oregon Creek Day-use Area at the end of the reach.

As summarized in Table 11.5-10, the average number of additional boating days under Alternative 2 compared to the Existing Condition is less than two days, on average, under most water year types (Critical, Dry, and Below Normal water years). The majority of additional boating days would occur in Wet water years (49.2 additional days) and Above Normal water years (17.9 additional days). However, most of the additional boating days occur on weekdays (35.6 and 13.0 days respectively) compared to the higher demand weekend boating days (13.5 and 4.9 days respectively). Notably, in Wet and Above Normal water years, there would likely be an abundance of other local and regional whitewater boating opportunities for boaters to choose from beyond just this Middle Yuba River reach. Thus, given the overall low number of additional weekend boating days and the timing of most of the additional boating days during Wet and Above Normal

water years, any resultant increase in use would not result in substantial physical deterioration of the Oregon Creek Day-use Area facility.

Table 11.5-10. Average number of peak season days (April-June) in the boatable flow range (600-2,000 cfs) by water year type on the Middle Yuba River below Our House Diversion Dam for Alternative 2 compared to the Existing Condition.

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
WEEKEND DAYS						
Alternative 2	13.5	4.9	2.0	0.0	0.0	4.6
Existing Condition	2.5	0.2	0.1	0.0	0.0	0.6
Difference	**11.0**	**4.7**	**1.9**	**0.0**	**0.0**	**4.0**
WEEKDAY DAYS						
Alternative 2	35.6	13.0	5.0	0.0	0.0	12.0
Existing Condition	6.7	0.6	0.6	0.0	0.0	1.7
Difference	**28.9**	**12.4**	**4.4**	**0.0**	**0.0**	**10.3**
TOTAL DAYS						
Alternative 2	49.2	17.9	7.0	0.0	0.0	16.6
Existing Condition	9.3	0.8	0.7	0.0	0.0	2.3
Difference	**39.9**	**17.1**	**6.3**	**0.0**	**0.0**	**14.3**

Changes in Lower Yuba River Flows Due to YRDP Operations

Changes in flows in the lower Yuba River under Alternative 2 YRDP operations could potentially result in increases in the use of neighborhood or regional parks providing river access. Additionally, changes in the flows in the lower Yuba River due to Alternative 2 operations could result in a reduction of river boating opportunities if flows were too low or too high to safely navigate the river or if they fall outside optimal boating flow ranges. If the reduction in use was substantial, then Alternative 2 operations could lead to substantial physical deterioration of existing lower Yuba River and other regional river access facilities or accelerate such deterioration.

Changes in the monthly average flows in the lower Yuba River under Alternative 2 compared to the Existing Condition are generally higher during November through May and lower during July through September over the entire simulation period. Average monthly flows by water year type exhibit similar trends but with substantially higher flows during December and February through May and substantially lower flows during July through September of most water years. While the lower Yuba River flows under Alternative 2 have a greater variability (i.e., higher and lower) compared to the Existing Condition, there are no definitive recreational flow ranges developed for the lower Yuba River. It is possible that some river boaters may change their use of the lower Yuba River based on lower or higher flows under Alternative 2, however, given the lack of a definitive boating range and the flows under Alternative 2 would generally be within the range of lower Yuba River flows that would occur during the recreational use season the recreational boating opportunities would not be expected to be substantially increased or reduced.

YRDP Impact REC-Alt2-2: Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

YRDP construction activities and non-flow operations and maintenance of YRDP recreational facilities under Alternative 2 would be the same as under the Proposed Projects, and therefore would have the same associated impacts. For the same reasons described above for YRDP Impact REC-PP-2, construction and operations of the YRDP recreational facilities under Alternative 2 would not result in any additional environmental impacts beyond those that are already disclosed in the resource-specific impact analyses in other chapters of this DEIR. Therefore, the impact would be **less than significant**.

Narrows Impact REC-Alt2-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Narrows Project operations under Alternative 2 would not substantially change the flows in the lower Yuba River and therefore would not increase recreational uses on the lower Yuba River or other regional rivers.

11.5.6 Alternative 2 Compared to the Future Baseline

YRDP Impact REC- FAlt2-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities
YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects, and impacts of construction activities are not dependent on or affected by flows. Thus, impacts of YRDP construction under Alternative 2 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, YRDP construction under Alternative 2 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Operation of Existing, Expanded, and New Recreational Facilities
Non-flow operations and maintenance activities under Alternative 2 would be the same as those under the Proposed Projects, and associated impacts are not dependent on or affected by flows. Thus, impacts of YRDP non-flow operations related to recreation facilities under Alternative 2 would be the same as those described above for the Proposed Projects. For the same reasons discussed above for YRDP Impact REC-PP-1, operation of existing, expanded, and new YRDP recreational facilities under Alternative 2 would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of recreational facilities.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations
Reservoir elevation-dependent recreation facilities at New Bullards Bar Reservoir (Dark Day and Cottage Creek boat ramps and Madrone Cove and Garden Point boat-in campgrounds) may be inaccessible at a higher frequency under Alternative 2 operations, which could have the potential to increase the use of existing neighborhood and regional parks or other recreational facilities such

that substantial physical deterioration of the facility would occur or be accelerated. Appendix 11A displays the daily median New Bullards Bar Reservoir water surface elevations compared to the functional water surface elevation of the YRDP boat ramps for Alternative 2 compared to the Future Baseline. More specifically,

Table 11.5-11 summarizes the changes in the number of days (over the entire simulation period [1970-2021] and by water year type) when the reservoir water surface elevation is below the accessible or usable elevation at each of these facilities under Alternative 2.

Table 11.5-11. Number of Days Below Useable Water Surface Elevation (ft) for Boat Ramps and Boat-in Campgrounds at New Bullards Bar Reservoir by water year type for the simulation period (1970-2021) for Alternative 2 compared to the Future Baseline.

Recreation Facility (usable elevation)	Scenario	Number of Days Below Facility's Useable Water Surface Elevation (ft) by Water Year Type for the Period of Record (1970-2021)					
		Wet (11 years)	Above Normal (14 years)	Below Normal (10 Years)	Dry (10 Years)	Critical (7 years)	Entire Period (52 years)
Cottage Creek Boat Ramp (1,853 ft)	Alternative 2	228	651	706	1,652	1,767	5,004
	Future Baseline	100	581	276	351	1,006	2,314
	Difference-Total (52 years)	**128**	**70**	**430**	**1301**	**761**	**2690**
	Difference-Annual (average)	**12**	**5**	**43**	**130**	**109**	**52**
Dark Day Boat Ramp (1,758 ft)	Alternative 2	0	80	0	0	0	80
	Future Baseline	0	0	0	0	0	0
	Difference-Total (52 years)	**0**	**80**	**0**	**0**	**0**	**80**
	Difference-Annual (average)	**0**	**6**	**0**	**0**	**0**	**2**
Garden Point Boat-in Campground (1,887 ft)	Alternative 2	1,310	2,275	2,265	3,044	2,469	11,363
	Future Baseline	1,030	1,711	1,570	1,952	2,185	8,448
	Difference-Total (52 years)	**280**	**564**	**695**	**1092**	**284**	**2915**
	Difference-Annual (average)	**25**	**40**	**70**	**109**	**41**	**56**
Madrone Cove Boat-in Campground (1,905 ft)	Alternative 2	1,870	3,013	2,937	3,482	2,556	13,858
	Future Baseline	1,429	2,395	2,277	2,647	2,397	11,145
	Difference-Total (52 years)	**441**	**618**	**660**	**835**	**159**	**2713**
	Difference-Annual (average)	**40**	**44**	**66**	**84**	**23**	**52**

For Dark Day Boat Ramp, there is either no change or a small increase (6 days in Above Normal water years) in the number days below the usable elevations for Alternative 2. For Cottage Creek Boat Ramp, the number of additional days below the usable elevations is substantial with an average of 52 additional days over the entire period (1970–2021), but particularly in Dry (130 additional days) and Critical (109 additional days) water years. At Madrone Cove and Garden Point boat-in campgrounds, the number of additional days below the usable elevations is substantial with an average of 52 and 56 additional days, respectively, over the entire period with as many as 84 additional days at Madrone Cove and 109 additional days at Garden Point in Dry water years. Overall, the number of additional days below the usable elevations at these facilities is substantially greater in most water year types under Alternative 2 except at Dark Day Boat Ramp.

The changes are substantial enough such that operation of Alternative 2 may result in a substantial number of displaced boaters and boat-in campers for much or all of the recreation season that it would result in an increase in use of either other boat ramps or boat-in campgrounds at New Bullards Bar Reservoir or potentially at other existing neighborhood and regional parks. Although there are other recreational facilities that displaced users could use, given the substantial number of displaced users (boaters and boat-in campers) and Yuba Water's inability to control whether those users would utilize other facilities and which facilities they would choose, substantial physical deterioration of other similar facilities could occur or be accelerated.

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

Relative to the Future Baseline, Alternative 2 operations have the potential to increase the number of peak season (April-June) boating days on the Middle Yuba River, particularly downstream of Our House Diversion Dam – an existing whitewater boating opportunity, which may result in the deterioration of the developed river access facility (Oregon Creek Day-use Area) at the end of the reach. Relative to the Future Baseline, the number of boating days during the peak boating season (April-June) on the Middle Yuba River downstream of Our House Diversion Dam is similar with a less than one percent difference (Table 11.5-12). Given the low number of additional weekend boating days from April through June and the timing of when most of these additional days occurs (Wet and Above Normal water years), any resultant increase in use would not result in substantial physical deterioration of the Oregon Creek Day-use Area facility.

Table 11.5-12. Average number of peak season days (April-June) in the boatable flow range (600-2,000 cfs) by water year type on the Middle Yuba River below Our House Diversion Dam for Alternative 2 compared to the Future Baseline.

Scenario	Average Peak Season Boating Days by Water Year Type					
	Wet	Above Normal	Below Normal	Dry	Critical	TOTAL
WEEKEND DAYS						
Alternative 2	13.5	4.9	2.0	0.0	0.0	4.6
Future Baseline	2.4	0.1	0.1	0.0	0.0	0.5
Difference	**11.2**	**4.9**	**1.9**	**0.0**	**0.0**	**4.0**
WEEKDAY DAYS						
Alternative 2	35.6	13.0	5.0	0.0	0.0	12.0
Future Baseline	6.8	0.4	0.4	0.0	0.0	1.6
Difference	**28.8**	**12.6**	**4.6**	**0.0**	**0.0**	**10.4**
TOTAL DAYS						
Alternative 2	49.2	17.9	7.0	0.0	0.0	16.6
Future Baseline	9.2	0.5	0.5	0.0	0.0	2.2
Difference	**40.0**	**17.4**	**6.5**	**0.0**	**0.0**	**14.4**

Changes in Lower Yuba River Flows Due to YRDP Operations

Changes in flows in the lower Yuba River from Alternative 2 YRDP operations could potentially result in increases in the use of neighborhood or regional parks providing river access. Additionally, changes in the flows in the lower Yuba River due to Alternative 2 operations could result in a reduction of river boating opportunities if flows were too low or too high to safely navigate the river or if they fall outside optimal boating flow ranges. If the reduction in use was

substantial, then Alternative 2 operations could lead to substantial physical deterioration of existing lower Yuba River and other regional river access facilities or accelerate such deterioration.

Changes in the monthly average flows in the lower Yuba River under Alternative 2 relative to the Future Baseline are generally higher during November through May and lower during July through September over the entire simulation period. Average monthly flows by water year type exhibit similar trends but with substantially higher flows during December and February through May and substantially lower flows during July through September of most water years. While the lower Yuba River flows under Alternative 2 have a greater variability (i.e., higher and lower) compared to the Future Baseline, there are no definitive recreational flow ranges developed for the lower Yuba River. It is possible that some river boaters may change their use of the lower Yuba River based on lower or higher flows under Alternative 2, however, given the lack of a definitive boating range and the flows under Alternative 2 would generally be within the range of lower Yuba River flows that would occur during the recreational use season the recreational boating opportunities would not be expected to be substantially increased or reduced.

CEQA Conclusion

Overall, most of the changes associated with the YRDP under Alternative 2 (i.e., construction-related, operational, and flow level-related) discussed in the aforementioned analysis would not substantially increase the use of existing recreational facilities or accelerate the physical deterioration of existing recreational facilities. However, the impacts related to the changes in New Bullards Bar Reservoir water surface elevations could be potentially significant given the high number of days that boat ramps and boat-in campgrounds would not be available under Alternative 2 operations and given how boat/reservoir-dependent use at New Bullards Bar Reservoir is, which could result in a substantial number of displaced users and a resultant increase in use at other regional reservoir-based recreation areas. Given the substantial number of displaced users and Yuba Water's inability to control whether they would utilize other facilities and which facilities they would choose, this impact would be **potentially significant and unavoidable**.

Narrows Impact REC-FAlt2-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Relative to the Future Baseline, Narrows Project operations under Alternative 2 would not substantially change the flows in the lower Yuba River and therefore would not increase recreational uses on the lower Yuba River or other regional rivers. As a result, the impact would be **less than significant**.

11.5.7 No Project Alternative Compared to the Existing Condition

YRDP Impact REC-NP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Construction or Expansion of YRDP Facilities

The No Project Alternative would not include any YRDP construction that could affect the use or deterioration of existing recreation facilities.

Operation of Existing, Expanded, and New Recreational Facilities

Under the No Project Alternative, Yuba Water would likely continue to operate and maintain the existing YRDP recreational facilities in a manner similar to its existing O&M responsibilities to keep the facilities in a safe, operable condition. The No Project Alternative would not include any new or expanded YRDP recreational facilities. Thus, the continued YRDP operations would not increase the use of existing neighborhood, regional parks or other recreational facilities such that substantial physical deterioration of facilities would occur or be accelerated.

Decreases in New Bullards Bar Reservoir Water Surface Elevations Due to YRDP Operations

Under the No Project Alternative, YRDP operations would not significantly change New Bullards Bar Reservoir water surface elevations compared to the Existing Condition and therefore would not cause associated changes to the use or deterioration of existing recreation facilities.

Changes in Middle Yuba River Flows Downstream of Our House Diversion Dam Due to YRDP Operations

Under the No Project Alternative, YRDP operations would not significantly change Middle Yuba River flows compared to the Existing Condition and therefore would not cause associated changes to the use or deterioration of existing recreation facilities.

Changes in Lower Yuba River Flows Due to YRDP Operations

Under the No Project Alternative, YRDP operations would not significantly change flows in the lower Yuba River compared to the Existing Condition and therefore would not cause associated changes to the use or deterioration of existing recreation facilities.

CEQA Conclusion

Overall, the No Project Alternative would not include any YRDP construction or operations that would change the use of existing recreational facilities or accelerate the physical deterioration of existing recreational facilities. As a result, there would be **no impact**.

YRDP Impact REC-NP-2: Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

The No Project Alternative would not include the construction of new, expanded or modified YRDP recreation facilities. Yuba Water would likely continue to operate and maintain the existing YRDP recreational facilities in a manner similar to its existing O&M responsibilities. Accordingly, there would be no physical changes to the existing environment resulting from construction or operation of new, expanded, or modified YRDP recreational facilities under the No Project Alternative. As a result, there would be **no impact**.

Narrows Impact REC-NP-1: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Flows in the lower Yuba River under the No Project Alternative would not significantly change compared to the Existing Condition and therefore would not cause any associated changes to the use or deterioration of existing recreation facilities. As a result, there would be **no impact**.

11.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) on recreation would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). Hydrologic modeling was used to evaluate the potential cumulative effects of the Proposed Projects and alternatives in combination with other likely changes in operations on hydrology and water supply. The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. The assumptions used to categorize future hydrologic cumulative conditions that are quantitatively simulated are presented in Chapter 5. To the extent feasible, potential cumulative impacts on resources dependent on hydrology or water supply (e.g., reservoir surface elevation) are analyzed quantitatively.

11.6.1 Cumulative Condition

For the purposes of this analysis, the area for which cumulative recreation resource impacts would be the Yuba River watershed. As described in Chapter 4, because several projects considered as part of the cumulative condition cannot be accurately characterized for hydrologic modeling purposes at this time, either due to the nature of the particular project or because specific operations details are only in the preliminary phases of development, these projects are evaluated qualitatively. Only those projects that could affect recreational resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to regional water supply operations or to water-related and water dependent resources that also could be affected by the Proposed Projects or alternatives. For this reason, only the limited numbers of projects with the potential to cumulatively impact recreation resources are presented below:

FERC Hydropower Projects in the Yuba River Watershed

- *Yuba-Bear, Upper Drum-Spaulding, and the Lower Drum Hydroelectric Projects (Yuba-Bear/Drum-Spaulding Relicensings)*

Flood Control Projects

- *ARC Spillway Project*
- *USACE NBB Dam and Reservoir Water Control Manual (WCM) Update*

Ecosystem Restoration and Fisheries Improvement Projects

- *Bay-Delta Water Quality Control Plan Update*
- *'Inimim Forest Restoration Project*
- *Lower Yuba River Accord Water Transfer Program Extension*

Other Local Projects in the Yuba Region

- *Yuba City Boat Ramp Sediment Removal Project (Yuba City Boat Ramp Project)*

These projects are described in Chapter 4, and their impacts related to recreation resources are addressed below.

11.6.2 Cumulative Condition with Proposed Projects compared to the Existing Condition

When considering the other cumulative projects discussed above, only the Yuba-Bear/Drum-Spaulding Relicensings, USACE NBB Dam and Reservoir WCM Update, ARC Spillway Project, Bay-Delta Water Quality Control Plan Update, and the Yuba City Boat Ramp Sediment Removal Project have the potential to affect future recreation conditions by increasing the use of existing recreational facilities such that substantial physical deterioration would occur. When considering the other cumulative projects discussed above, only the Yuba-Bear/Drum-Spaulding Relicensings and the Yuba City Boat Ramp Sediment Removal Project would involve the construction or expansion of recreation facilities.

The Yuba-Bear/Drum-Spaulding Relicensings would have similar impacts to the YRDP Relicensing and would also have similar measures through the implementation of a Recreation Facilities Plan that would minimize or avoid impacts to recreation resources and particularly increasing use of regional recreation facilities. The Yuba-Bear/Drum-Spaulding Relicensings would involve substantial construction projects, including recreation facilities and areas. However, it can be assumed that construction work would be similar to the Proposed Projects. Furthermore, the construction work associated with the Yuba-Bear/Drum-Spaulding Relicensings is distant from the Proposed Projects and the Yuba-Bear/Drum-Spaulding Relicensings are not expected to have impacts outside the Yuba-Bear/Drum-Spaulding area.

Unmanaged recreational use has the potential to have an adverse effect on the physical environment through increased use of existing recreation facilities such that substantial physical deterioration of the facility would occur or be accelerated. However, the YRDP *Recreation Facilities Plan* includes a three-step planning and implementation process, which includes measures to avoid or minimize direct impacts to the physical environment. The *Recreation Facilities Plan* also includes a routine and operational maintenance program at the recreation facilities that would minimize any impacts due to ongoing use of these facilities. The Yuba-Bear/Drum-Spaulding Relicensings include a Recreation Facilities Plan that, similar to the YRPD

relicensing, guides the operation and management of recreation facilities and use and includes similar measures to avoid or minimize direct impacts to the physical environment.

Implementation of the flood control, ecosystem restoration, and fisheries improvement projects could result in changes in New Bullards Bar Reservoir water elevations that could affect access to the water from established recreational facilities (e.g., boat ramps) or reduce the reservoir surface area, potentially resulting in increased recreational use (e.g., boating, camping) in other areas. Typically, recreational use on reservoirs will decrease as water levels recede, which may result in boat ramps being less accessible/usable, thereby creating conditions where recreational facilities are farther from shorelines. Lower water levels at New Bullards Bar Reservoir could affect the recreational facilities and activities by preventing or limiting lake access from existing facilities such as marinas, boat ramps, and boat-in campgrounds.

The USACE NBB Dam and Reservoir WCM Update and the Bay-Delta Water Quality Control Plan Update have the potential to alter YRDP reservoir levels, which could affect the availability or access to YRDP boat ramps and boat-in campgrounds and potentially increase the use of other regional facilities if YRDP users are displaced. These impacts are anticipated to be short-term, infrequent, and not anticipated to substantially impact YRDP reservoir water levels such that a substantial amount of YRDP users would be displace and cause substantial physical deterioration of existing regional recreation facilities. Overall, for the peak recreation season (May through September), New Bullards Bar Reservoir water levels could be lower as a result of the USACE NBB Dam and Reservoir WCM Update and the Bay-Delta Water Quality Control Update, which could lead to some boat ramps being inaccessible more frequently, particularly during critical and dry water years.

Construction of the ARC Spillway Project would have short-term impacts on the availability of the Dam Overlook Observation Site (closed during construction and reconstructed following construction of the ARC Spillway Project); however the overlook site is a low-use site and other nearby day-use sites (Sunset Observation Site and Cottage Creek Boat Launch) provide a similar reservoir/dam overlook opportunities and ample capacity to absorb the limited amount of displaced users.

The Yuba City Boat Ramp Project would have short-term impacts on the availability of the boat ramp and may increase the use of other regional river access facilities although numerous other facilities exist to address displaced users. Once complete, the facility would have a beneficial impact by providing an upgraded river access facility to support existing and future river access demand. The Yuba City Boat Ramp Project would involve construction to upgrade the boat ramp; however, the draft EIR includes measures to minimize adverse physical impacts on the environment during construction. Impacts associated with these cumulative projects would be less than significant individually, particularly with the implementation of the mitigation measures or plans designed to minimize adverse physical impacts.

When considering the other cumulative projects discussed above, only the Yuba-Bear/Drum-Spaulding Relicensings, USACE NBB Dam and Reservoir WCM Update, and the Bay-Delta Water Quality Control Plan Update would have the potential to affect future recreation conditions in the lower Yuba River due to changes in flows. While flow changes are likely, these projects are unlikely to result in substantial increases or decreases in use on the lower Yuba River for the same

reasons as the discussion with the YRDP relicensing above. As a result, these projects would not cause substantial physical deterioration of existing recreation facilities to occur along the lower Yuba River or at other regional river access facilities if users were displaced.

The Proposed Projects would have a variety of impacts related to construction (i.e., new or expanded recreation facilities), operation (i.e., rehabilitation and reconstruction activities), changes in reservoir levels (i.e., reduced availability of boat ramps and boat-in campgrounds), and changes in flows (i.e., increasing or reducing boating opportunities) that could potentially increase use of existing YRDP or other regional reservoir-based recreation facilities such that substantial physical deterioration would occur.

Overall, the impacts from these cumulative projects would be less than significant as, similar to the Proposed Projects, these projects would be short in duration, phased/occur at different times, and occur infrequently (not regularly). Under the Cumulative Condition, including the Proposed Projects, the cumulative impact to recreation resources would be less than significant.

YRDP Cumulative Impact REC-PP-1: Potential for significant cumulative recreation impacts.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative recreation impact would be less than significant. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** related to recreation.

Narrows Cumulative Impact REC-PP-1: Potential for significant cumulative recreation impacts.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative recreation impact would be less than significant. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** related to recreation.

11.6.3 Cumulative Condition with Alternative 1 compared to the Existing Condition

There are a limited number of projects in the areas upstream of Englebright Dam with the potential to cumulatively impact recreation resources as described in Section 11.6.1. These include the Yuba-Bear/Drum-Spaulding Relicensings, USACE NBB Dam and Reservoir WCM Update, ARC Spillway Project, Bay-Delta Water Quality Control Plan Update, and the Yuba City Boat Ramp Sediment Removal Project.

Impacts associated with YRDP construction, non-flow YRDP operations, and Narrows Project operations under Alternative 1 would be similar to those described above for the Proposed Projects and would have similar incremental contributions to the Cumulative Condition. Although Alternative 1 and the Proposed Projects have some differences in flow-based YRDP operations, those would not lead to a substantial difference for purposes of the cumulative analysis.

Alternative 1 also includes Yuba-Bear/Drum-Spaulding conditions with the 15.6 TAF of water provided by the Yuba-Bear/Drum-Spaulding projects, which have the potential to have indirect impacts on boat ramp availability and changes in river boating use in Yuba-Bear/Drum-Spaulding reservoirs and reaches, respectively, upstream of the YRDP in during Dry and Critical water years. As discussed in Section 11.5.4, the impacts to Yuba-Bear/Drum-Spaulding boat ramp availability

that could potentially increase use at other area boat ramp facilities (leading to physical deterioration of those ramps) is likely not substantial. Further, the changes in flows in the Middle Yuba and South Yuba rivers would not displace a substantial number of boaters that would lead to physical deterioration of other river access facilities.

Overall, under the Cumulative Condition, including Alternative 1, the cumulative impact to recreation resources would be less than significant.

YRDP Cumulative Impact REC-Alt1-1: Potential for significant cumulative recreation impacts.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative recreation impact would be less than significant. Accordingly, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** related to recreation.

Narrows Cumulative Impact REC-Alt1-1: Potential for significant cumulative recreation impacts.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative recreation impact would be less than significant. Accordingly, Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** related to recreation.

11.6.4 Cumulative Condition with Alternative 2 compared to the Existing Condition

There are a limited number of projects in the areas upstream of Englebright Dam with the potential to cumulatively impact recreation resources as described in Section 11.6.1. These include the Yuba-Bear/Drum-Spaulding Relicensings, USACE NBB Dam and Reservoir WCM Update, ARC Spillway Project, Bay-Delta Water Quality Control Plan Update, and the Yuba City Boat Ramp Sediment Removal Project.

Impacts associated with YRDP construction, non-flow YRDP operations, and Narrows Project operations under Alternative 2 would be similar to those described above for the Proposed Projects and would have similar incremental contributions to the Cumulative Condition. However, Alternative 2 and the Proposed Projects have some differences in flow-based YRDP operations, and as explained above, YRDP operations under Alternative 2 could substantially change New Bullards Bar Reservoir water surface elevations such that there would be a substantial number of displaced boaters and boat-in campers for much or all of the recreation season that would in turn increase use of other boat ramps or boat-in campgrounds at New Bullards Bar Reservoir or other existing neighborhood and regional parks. In turn, this could cause substantial physical deterioration of other similar facilities to occur or be accelerated. Given this potential, under the Cumulative Condition, including Alternative 2, the cumulative impact to recreation resources would be significant.

YRDP Cumulative Impact REC-Alt2-1: Potential for significant cumulative recreation impacts.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative impact to recreation resources would be significant. Because this significant cumulative impact is primarily due to the changes in New Bullards Bar Reservoir water levels from YRDP operations under Alternative 2, those operations would have a cumulatively considerable incremental

contribution to the cumulative impact. Accordingly, YRDP activities under Alternative 2 would have a **significant cumulative impact** to recreation.

Narrows Cumulative Impact REC-Alt2-1: Potential for significant cumulative recreation impacts.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative impact to recreation resources would be significant. However, the cumulative impact is primarily due to YRDP operations under Alternative 2. By contrast, Narrows Project operations under Alternative 2 would not result in substantial changes relating to recreation facilities relative to the Existing Condition, and therefore would not have a cumulatively considerable incremental contribution to the cumulative impact. As a result, Narrows Project operations under Alternative 2 would have a **less than significant cumulative impact** to recreation.

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Yuba Water. *See* Yuba County Water Agency.

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CHAPTER 12

VISUAL RESOURCES

12.1 Introduction

This chapter describes the environmental setting and regulatory framework for visual resources and presents an analysis of direct, indirect, and cumulative impacts of the Proposed Projects and Alternatives during construction and O&M. The analysis determines whether implementing the Proposed Projects or Alternatives would result in significant adverse changes to the visual character and quality of the Project Area.

12.2 Environmental Setting

Both natural and built landscape features contribute to perceived visual images and the aesthetic value of a view. The value is determined by contrasts, forms, and textures exhibited by geology, hydrology, vegetation, wildlife, and built features. Individuals respond differently to changes in the physical environment, depending on prior experiences and expectations and proximity and duration of views. Therefore, visual effects analyses tend to be highly subjective in nature. Nevertheless, the basic elements that comprise the visual character of landscape features are considered to be form, line, color, and texture. The appearance of a landscape is typically described in terms of the dominance of each of these elements.

The following section discusses the main landscape features and visual resources of the Project Area and vicinity. These features and resources would be potentially affected by the Proposed Projects.

12.2.1 Areas Upstream of Englebright Dam

12.2.1.1 Visual Landscape

12.2.1.1.1 Vegetation and Geology

Upstream of Englebright Dam, the facilities and features of the YRDP are in the northern Sierra Nevada mountain range and more specifically within the subregion of flat ridge tops and steep valley zone. The terrain is rolling to flat ridge tops interspersed with deep valleys. Cliffs and swaths of varying red, white, and yellowish soils are seen along roadcuts, trails, and areas disturbed during past construction of New Bullards Bar Dam and recreation facilities, as well as areas currently in use by Yuba Water for periodic equipment or materials storage. Grayish-white natural rock outcroppings are visible along the steep valley walls where overlying soil has been eroded to bedrock, especially in the North Yuba River canyon.

The dominant visual character for the New Bullards Bar Reservoir area is a continuous cover of mixed conifer forest along with oaks and madrone (Figures 12.2-1 and 12.2-2). Madrone, live oak, and black oak are significant components of the mixed conifer forest in the New Bullards Bar Reservoir area. Log Cabin Diversion Dam and Our House Diversion Dam are included in this area,

but both are located in the lower parts of the steep valley walls. The mixed conifer is composed primarily of ponderosa pine, white fir, and Douglas fir with a sprinkling of sugar pine. The forest vegetation is vigorous and dense with medium to fine texture and medium to dark green in color. In winter, the conifers keep the hillsides looking predominantly green. In the spring, the hillsides look a brighter yellow green due to new growth on the conifers and new leaves on the deciduous trees (YCWA 2023a).



Figure 12.2-1. View from Moran Road Day Use Area.



Figure 12.2-2. View from Burnt Bridge Campground.

12.2.1.1.2 Water Features

There are two significant water features in the Project Area: New Bullards Bar Reservoir and Englebright Reservoir. As described in Chapter 2, Project Description, New Bullards Bar Reservoir covers approximately 4,790 surface acres at full capacity. In spring and summer, views at the reservoir typically consist of blue water and a shoreline that is predominantly forested. However, bare red, yellow, and white soils along the shoreline are exposed when the New Bullards Bar Reservoir water surface level drops during seasonal drawdowns, leaving what is often called a "bathtub ring" (Figure 12.2-3). The drawdowns occur during the summer and early fall, prior to the start of the rainy season, which typically occurs from November to April. Although this occurs seasonally and is part of normal reservoir operations, such a feature is considered to have an adverse visual effect. This is further discussed in the Viewer Sensitivity section below.

Views of the reservoir are available from the dam and along segments of Marysville Road, including from a designated Dam Overlook site off Marysville Road east of the dam. Views are also available from some of the YRDP recreation facilities: Madrone Cove and Garden Point boat-in campgrounds, select campsites at Dark Day Campground, and Moran Road Day Use Area (YCWA 2012). Chapter 12, Recreation, discusses these facilities in more detail.



Figure 12.2-3. Typical drawdown at New Bullards Bar Reservoir.

As noted in Chapter 2, Englebright Reservoir, a USACE facility, covers approximately 815 acres at its normal maximum water surface elevation of 527 feet. The views of the shoreline of Englebright Reservoir are similar to those of the New Bullards Bar Reservoir shoreline, although the Englebright shoreline is not as densely vegetated. A "bathtub ring" effect also occurs as a result of seasonal drawdowns. Views of Englebright Reservoir are limited to local roads that access the site; the reservoir is not near any State Highways or numbered County Roads.

The Log Creek Diversion Dam and the Our House Diversion Dam create smaller water features that cover approximately five and 14 acres, respectively. Both features are surrounded by dense

green trees and shrubs. The Log Cabin impoundment is only visible in the foreground from Log Cabin Road, a paved and gravel road that extends approximately 0.6 miles from Marysville Road and is gated. The Our House impoundment is only visible in the foreground from Pliocene Ridge Road (County Road 180) approximately 4.5 miles from State Highway 49 (YCWA 2012).

There are several streams that contribute to the visual landscape, including the North Yuba River across which New Bullards Bar Dam is constructed. Like many streams in the Sierra Nevada and foothills, the North Yuba River flows through a deeply incised, fairly narrow canyon throughout much of its length. The canyon generally includes the slopes above the river channel, extending up to the nearest ridgetop, or other major topographic change (YCWA 2023a). Other streams in the vicinity of note include the Middle Yuba River, the South Yuba River, Slate Creek, and Oregon Creek. Thirty-nine miles of the lower South Yuba River, between Lake Spaulding and Englebright Reservoir, are designated as a California Wild and Scenic River and federally recommended as a Wild and Scenic River[1] (SRWP 2025).

12.2.1.1.3 Built Environment

Since the Project Area is predominantly rural, there are relatively few built features in the visual landscape. However, a prominent built feature is New Bullards Bar Dam. As described in Chapter 2, Project Description, New Bullards Bar Dam is a concrete arch dam approximately 645 feet in height, with a spillway and the New Bullards Bar Minimum Flow Powerhouse, the latter in front of the dam. New Bullards Bar Dam is visible from several locations along Marysville Road, which crosses the dam at its crest. Other built features on or near New Bullards Bar Reservoir include Emerald Cove Marina with parking lot, several campgrounds, and boat launches. Chapter 12, Recreation, describes these in more detail. The marina is near the dam, while the campgrounds are in the more forested areas around the reservoir.

Another prominent feature is Englebright Dam, a concrete constant angle arch structure with a height of 260 feet. Views of this structure are limited to local roads that access the site. The Narrows 1 and Narrows 2 Powerhouses are located near to and in front of Englebright Dam. Skipper's Cove Marina is the only other prominent built feature in this area, located along the eastern shoreline of Englebright Reservoir.

Other built features of note include:

- Log Cabin Diversion Dam, a concrete arch dam approximately 42.5 feet in height. Visibility of the dam is the same as that for the impoundment (see above).
- Our House Diversion Dam, a concrete arch dam approximately 70 feet in height. Visibility of the dam is the same as that for the impoundment (see above).
- New Colgate Powerhouse, a mostly underground, steel reinforced, concrete powerhouse located adjacent to the Yuba River approximately five miles southwest of New Bullards

[1] The Wild and Scenic Rivers Act of 1968 established the National Wild and Scenic Rivers System, protecting for future generations free-flowing waterways with extraordinary natural, cultural and recreational qualities. The California Wild and Scenic Rivers Act was passed in 1972 to preserve rivers designated by the state that possess extraordinary scenic, recreation, fishery, or wildlife values.

Bar Dam. The powerhouse is only visible in the foreground from Lake Francis Extension Road; there are no State Highways or numbered County Roads in the vicinity.

Other than the facilities described above, the only built features in the Project Area above Englebright Dam are roads and scattered residential and commercial buildings.

12.2.1.2 Viewer Sensitivity

Sensitivity levels are a measure of visitors' concern for the scenic quality of public lands. The basic assumption is that where there are high numbers of visitors using roads and trails or developed recreation facilities, including lakes and rivers, there is likely to be a high concern for scenic values. Conversely, where there are few people or the people who are working in forest or related industries, there would generally be a lower concern for scenic values (YCWA 2012).

In 2012, as part of the FERC licensing application process, Yuba Water conducted a visual quality assessment of the YRDP facilities and features on federal land[2] (YCWA 2012). Appendix 12A contains this assessment. While not specifically required by the FERC-approved study, Yuba Water also assessed the visual quality of YRDP facilities and features on land owned by Yuba Water. Field assessments were conducted by qualified specialists primarily by vehicle and on foot, as well as by boat for boat-in campgrounds. Digital photographs were taken from all key observation points (KOPs), which are critical viewpoints where the public can view YRDP facilities and features.

Viewer sensitivity has been formalized by USFS as part of its development of Visual Quality Objectives (VQOs) for the Tahoe National Forest (TNF) and Plumas National Forest (PNF). Sensitivity levels were identified by USFS through a formal planning process that systematically inventoried all roads, trails, and use areas; assigned sensitivity levels; and mapped seen areas by distance zones during development of the Land and Resource Management Plans (LRMPs) that apply to USFS lands adjacent to the project site. Sensitivity levels are assigned as follows:

- Sensitivity Level 1 includes primary travel routes and recreation use areas where visitors are expected to have a high concern for scenic values.
- Sensitivity Level 2 includes secondary travel routes and recreation use areas of lower use where visitors are expected to have a moderate concern for scenic values.
- Sensitivity Level 3 includes travel routes with low use, or those are for forest industry use, and areas with very low recreation use where concern would be expected to be low. Sensitivity Level 3 also includes areas with virtually no visitor use.

Sensitivity levels are assigned to "viewsheds", which the YRDP visual quality assessment defined as including all the public travel routes, recreation areas, and reservoirs from which the public can view YRDP facilities and features, as well as the surrounding landscape, which is often beyond the FERC Project Boundary. Viewsheds were identified by the USFS through formal planning processes that systematically inventoried all roads, trails, and use areas; assigned sensitivity levels;

[2] TM 10-1 excluded facilities on federal land managed by the USACE (i.e., the Narrows 2 Power Intake and Tunnel, and an associated project road). As such, the Visual Quality Study conducted for the YRDP included facilities and features on NFS land, which occurs primarily upstream of New Bullards Bar Dam and at Our House and Log Cabin diversion dams.

and mapped seen areas by distance zones. The following viewsheds were identified and assigned Sensitivity Level 1 by USFS (YCWA 2012):

- County Route 8 (Marysville Road) – for motorists traveling along Marysville Road and viewing the New Bullards Bar Dam and Reservoir and surrounding landscape.
- Bullards Bar Trail – for hikers on the trail.
- New Bullards Bar Dam Overlook – for motorists stopping at the Overlook and viewing the area.
- Cottage Creek Boat Launch, Emerald Cove Marina, and General Store – for boaters and visitors using picnic facilities.
- Sunset Vista Point Picnic Area and Trailhead (trailhead for Bullards Bar Trail) – for day users using picnic areas, viewing New Bullards Bar Dam and Reservoir, and beginning/ending hikes.

On NFS land, all the YRDP facilities and features met the PNF's and TNF's applicable LRMP visual direction, with the exception of the land exposed by seasonal drawdown around New Bullards Bar Reservoir. The contrast increases as the reservoir is drawn down through the summer and fall. The broad band of exposed, mostly reddish soils with no plant growth and tree stumps is an apparent visual feature to the public and most recreation users, and contrasts to the surrounding continuous native forest cover. The drawdown zone does not meet the visual direction of the LRMP, although recreation users generally expect a significant drawdown to the reservoir over the summer and continue to recreate at the reservoir. For a multiple-use reservoir like New Bullards Bar, drawdown is an expected outcome from managing the reservoir (YCWA 2012).

Yuba Water also assessed the visual quality of YRDP facilities and features on land owned by Yuba Water using the USFS methodology. On land owned by Yuba Water at New Bullards Bar Reservoir, the Emerald Cove Marina and moored houseboats did not meet visual direction due to visual contrast from the white and lightly colored docks, buildings, boats, and rental house boats. The visual contrast of these facilities is expected and is considered part of normal recreation management for a reservoir like New Bullards Bar Reservoir. In addition, New Bullards Bar Dam, which is visible from Sunset Vista Point and Bullards Bar Trail on NFS land, does not meet LRMP visual direction due to visual contrast (YCWA 2012).

12.2.2 Lower Yuba River

The lower Yuba River includes the Narrows Project facilities and areas downstream from Englebright Dam. The Narrows Project facilities are in the narrow canyon transition zone between the Central Valley ecoregion to the lower elevations of the Sierra Foothills ecoregion, characterized by open rolling terrain, with vegetation dominated by grasslands, interspersed with oak woodlands, chaparral, and rock outcrops. Elevations range from approximately 300 feet at the Narrows Powerhouse on the river to approximately 849 feet at the top of the tram and limit the viewscape (YCWA 2023b).

Dominant visual elements in the Narrows Project Area are the non-Project USACE's Englebright Dam, the YRDP's Narrows 1 and 2 facilities, and the Yuba River canyon. A description of Englebright Dam and its visibility is provided in the section above describing the areas upstream

of Englebright Dam. Since the Narrows 1 and 2 Powerhouses are in the same area as Englebright Dam, their visibility is the same as that of the dam.

No viewsheds with a high viewer sensitivity have been identified previously for the Narrows Project Area; however, no notable important scenic resources are found in the Narrows Project Area. The canyon wall on which the Narrows Project sits is moderately vegetated with chaparral and other brushy plant species, except for near the Project's facilities (i.e., powerhouse, penstock, and tram) where vegetation is cleared for Project safety purposes, and along a PG&E-owned transmission line. Narrows Project facilities are not visible from any public viewpoints. The powerhouse and penstock are located at the bottom of the river canyon, and the top of the tram is not viewable from any public viewpoints. The slope across from the Narrows Project has no residences or roads (YCWA 2023b). As noted above, only a few local roads provide access to the Englebright Dam area, and views from these roads are considered limited.

As the Yuba River flows past the Narrows Project area, the associated floodplain begins to broaden. The floodplain consists of gravel deposits interspersed with riparian vegetation. Toward the edge of the Sierra Foothills ecoregion, the river passes by the Yuba Goldfields, a gold dredge field with a landscape consisting of roughly linear mounds of gravels called dredge tailing windrows, ravines, streams, and pools of water. On the river in the Yuba Goldfields is Daguerre Point Dam, a USACE facility built in 1906 to prevent debris from hydraulic mining from clogging waterways downstream and impeding river navigation. On the northern riverbank at the eastern edge of the Yuba Goldfields is Hammon Grove Park, a Yuba County park with a forest of oak and sycamore trees. Hammon Grove Park is accessible to the public; however, other parts of the Yuba River from Englebright Dam to Hammon Grove Park have limited public access, due to the lack of public roads and the presence of private property. State Highway 20 crosses the Yuba River near the community of Timbuctoo, thereby providing views of the river and surrounding landscape.

From the Yuba Goldfields, the Yuba River enters the Central Valley region, in an area consisting mainly of farmland and grazing ranges, with riparian vegetation along the riverbanks. The Yuba River eventually discharges into the Feather River near the City of Marysville. The area near the discharge point is a mix of urban development, recreation facilities, levees, and open space with riparian vegetation. Public views of this segment of the Yuba River are available from a bridge on State Highway 70 that connects Marysville with the community of Linda, and from a bridge on Marysville-Simpson Road southeast of Marysville.

12.2.3 Reaches Upstream of the YRDP

As discussed in Chapter 4, Framework for Environmental Analysis, indirect impacts may occur on the Middle Yuba River from Jackson Meadows Reservoir to Our House Diversion Dam, on Canyon Creek from Bowman Lake to the confluence with the South Yuba River, and on the South Yuba River from Fordyce Lake to Englebright Reservoir (see Figure 4.3-1). The major physiographic feature is the Sierra Nevada Range, which forms the eastern limit of the Yuba and Bear River Basins. Drainage within the Yuba and Bear River Basins is west to southwest from the Sierra Crest to the adjacent floor of the Sacramento Valley. The modern Yuba and Bear River Basins drain the northwestern Sierra Nevada via a series of deep canyons separated by high, steep-sided ridges and a parallel drainage network. The parallel drainage network results in narrow ridges

between small tributaries. Distinctive, V-shaped inner gorge areas are common in all of the major drainages in the vicinity.

The landscape throughout this area is predominantly forested. As described in Chapter 10, Non-Fisheries Biological Resources, vegetation in the foothills (below 2,000 feet msl) is dominated by an overstory of gray pine and ponderosa pine, with a mixture of small stands of hardwoods including canyon live oak, interior live oak, and blue oak, and low-elevation chaparral shrubs. The forest is occasionally interrupted by patches of non-native annual grasslands. In some areas, pure stands of ponderosa pine exist where the conifer has been planted following fires and/or logging. In riparian areas, black cottonwood, white alder, and valley oak are common. At mid-elevations (between 2,000 and 5,000 feet msl), dominant vegetation includes incense cedar, Douglas fir, white fir, madrone, and sugar pine. Additionally, significant stands of Brewer's oak occupy south-facing slopes and areas of annual grasslands, along with chaparral vegetation that includes whiteleaf and greenleaf manzanita, among other species. Riparian areas are dominated by white alders, maple, and willows.

Along with the forests, the most prominent visual features in the area are water features. The main water features in the area are the Middle Yuba River and the South Yuba River, along with Fordyce Creek and Canyon Creek. Reservoirs are significant water features in the area. Jackson Meadows Reservoir has a surface area of about 1,008 acres, and the normal maximum water surface elevation of the reservoir is 6,036.0 feet msl. Bowman Lake has a surface area of 827 acres, and normal maximum water surface elevation is 5,562.0 feet msl. Fordyce Lake has a surface area of 716.2 acres, and normal maximum water surface elevation is 6,405.1 feet msl. Lake Spaulding has a surface area of 682 acres, and normal maximum water surface elevation is 5,014.6 feet. Several smaller reservoirs that are part of the Yuba-Bear/Drum-Spaulding Projects are in the area.

Prominent developed features in this area are the dams, reservoirs, and other facilities that are part of the Yuba-Bear and the Drum-Spaulding Projects. The Bowman Development is composed of Jackson Meadows Reservoir, Dam, and spillway, among other structures. Jackson Meadows Dam is a 195-foot-high, 1,530-foot-long zoned embankment structure that impounds the Middle Yuba River to form Jackson Meadows Reservoir. Bowman North Dam and Bowman South Dam impound Canyon Creek to form Bowman Lake. Bowman North Dam is a 175-foot-high, 700-foot-long rock-fill dam, with a crest elevation of 5,567.0 feet msl. Bowman South Dam is a 135-foot-high, 400-foot-long constant radius arch dam constructed in nine monoliths. The Spaulding No. 1 and No. 2 Development consists of Fordyce Lake and Spaulding Lake, among other facilities. Fordyce Lake is formed by Fordyce Dam, a 156-foot-high, 1,220-foot-long rock-fill dam. Lake Spaulding is created by three dams: Lake Spaulding Dam No. 1 (main dam) is a 276-foot-high, 800-foot-long concrete-arch dam that impounds the South Yuba River. Lake Spaulding Dam No. 2 is a 42-foot-high, 309-foot-long concrete-gravity dam located on an unnamed tributary to Jordan Creek. Lake Spaulding Dam No. 3 is a 91-foot-high, 813-foot-long concrete gravity arch dam on a topographic low point that would otherwise drain to Jordan Creek. Smaller dams and reservoirs are scattered throughout this area.

12.3 Regulatory Setting

12.3.1 Federal

12.3.1.1 Resource Management Plans for the Tahoe National Forest and the Plumas National Forest

As discussed in Chapter 22, Land Use and Planning, the TNF and PNF each have a LRMP. Each LRMP established VQOs for areas within the TNF and PNF and specified desired visual outcomes for management activities and projects to meet adopted VQOs (Forest Service 1988 and Forest Service 1990). The VQO standards applicable to the Proposed Projects are "Retention," "Partial Retention," and "Modification," each of which is described below (Forest Service 1974).

a) **Retention VQO** - "Management Activities may only repeat form, line, color, and texture, which are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be visually evident."

b) **Partial Retention VQO** - "Management Activities may repeat form, line, color, or texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc., remain visually subordinated to the characteristic landscape."

c) **Modification VQO** - "Management Activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area. Additional parts of these activities such as structures, roads, slash, root wads, etc. must remain visually subordinate to the proposed composition."

As discussed above, in 2012, Yuba Water conducted a visual quality assessment of the YRDP facilities and features for compliance with visual direction in the PNF's and TNF's LRMP, although the VQOs do not apply on private land. On NFS land, all the YRDP facilities and features met the applicable LRMP visual direction except for land exposed by seasonal drawdown around New Bullards Bar Reservoir.

12.2.3.2 Wild and Scenic Rivers

The federal Wild and Scenic Rivers program, created by the Wild and Scenic Rivers Act of 1968, preserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition. Rivers may be designated by Congress or, if certain requirements are met, the Secretary of the Interior. Each river is administered by either a federal or state agency. Protection of the designated river is provided through voluntary stewardship by landowners and river users and through regulation and programs of federal, state, local, or tribal governments.

There are currently no federally designated Wild and Scenic Rivers in the Project Area and vicinity. However, the North Yuba River upstream of New Bullards Bar Reservoir is proposed for federal designation as a scenic river (YCWA 2023a).

12.3.2 State

12.3.2.1 Scenic Highway Program

The Department of Transportation (Caltrans) manages the State Scenic Highway Program and provides guidance to local government agencies, community organizations and citizens that are pursuing the official designation of a State Scenic Highway. State Highway 49 in the Project Vicinity has one officially designated segment and one eligible segment. The officially designated scenic highway is a 41.2-mile segment from the Yuba County line to Yuba Summit in Sierra County. The eligible segment is from Route 20 near Nevada City, California to the Sierra County line where the officially designated segment begins (Caltrans 2024). The Proposed Projects facilities are not visible from either segment.

12.3.2.2 California Wild and Scenic Rivers

The State of California also has a Wild and Scenic Rivers system, created by the California Wild and Scenic Rivers Act of 1972, The purpose of the California Wild and Scenic Rivers system is the same as that of the federal Wild and Scenic Rivers system – preservations of certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values in their free-flowing state. The system consists of designated California waterways specified in the California Public Resources Code. The California Resources Agency oversees the State program.

A segment of the South Yuba River has been designated a Wild and Scenic River under the State program. This segment, approximately 39 miles long, extends from Lang Crossing to its confluence with Kentucky Creek below Bridgeport in Nevada County.

12.3.3 Local

12.3.3.1 Yuba County General Plan

The Yuba County 2030 General Plan has broad goals to maintain or enhance the visual quality of the lands within the county with an emphasis on a policy that states: “encourage the preservation and enhancement of the natural features of the County, including rivers and areas of scenic beauty, and native vegetation.” The General Plan emphasizes protecting views from scenic highways and other important highways, specifically, Marysville Road and State Highway 49 (Yuba County 2011b).

The Natural Resources Element of the Yuba County 2030 General Plan contains goals and policies relevant to visual resources. The following goals and policies of the Natural Resources Element are applicable to the Proposed Projects (Yuba County 2011b):

GOAL NR9: Preservation of Yuba County’s important visual resources.

- Policy NR9.1: New developments near the Yuba, Bear and Feather Rivers should be designed and located in a way that retains or enhances scenic views of these important visual resources.

- Policy NR9.4: New buildings in areas of natural and scenic beauty should be placed and designed in a way that preserves scenic vistas available from public rights-of-way, parks and other public viewing areas.

- Policy NR9.5: The County supports the designation of SR 49 as a State Scenic Highway and will guide land use change in areas visible from this highway in a way that preserves important aspects of the visual character.

- Policy NR9.6: Grading and drainage for new developments in foothill and mountain areas should preserve and take advantage of the natural landforms and vegetation.
- Policy NR9.7: New construction should be designed to avoid excessive cut and fill by following the natural corridor of the subject site.

GOAL NR11: Aesthetics of the built environment.

- Policy NR11.2: In new development areas, service, utility, loading areas, roof-mounted equipment, and noise-generating equipment shall be screened, design, and located to reduce visibility, odor, and noise as experienced at surrounding properties and pedestrian areas.
- Policy NR11.4: To the maximum extent feasible, new developments shall avoid adverse light and glare effects on adjacent roads, neighboring properties, and pedestrian areas through careful location of on-site lighting, use of non-reflective paint and building materials, screening or shielding of light at the source, use of vegetation screening, use of directional lighting, use of lower intensity lighting, use of timing devices or sound/motion-controlled lighting, or other equally effective means.

12.3.3.2 Nevada County General Plan

Like the Yuba County General Plan, the Nevada County General Plan also addresses visual resources. The scenic values and aggregate appearance of all the cities, towns, and suburban areas define the aesthetic quality of Nevada County. Achieving a desirable aesthetic character involves attention to both urban design and scenic preservation (Nevada County 2014).

The Aesthetics Element of the Nevada County General Plan contains goals and policies relevant to visual resources. The following goals, objectives, and policies of the Aesthetics Element are applicable to the Proposed Projects (Nevada County 2014):

GOAL 18.2: Protect and preserve important scenic resources.

Objective 18.2: Develop standards to protect scenic resources and viewsheds.

Policy 18.3: The County shall establish standards for the protection of large-scale views and viewsheds and shall incorporate such standards in the Comprehensive Site Development Standards. The standards shall provide an inventory of sensitive views and viewsheds within Nevada County, and specify protective measures and impact controls applicable through the project site review process.

Policy 18.7: Encourage protection of scenic corridors wherever feasible.

Objective 18.3: Promote the conservation of scenic roads and highways.

Policy 18.10: New and replacement road system lighting shall utilize fixtures and light sources that minimize night-time light pollution, without compromising traffic safety.

12.3.3.3 Sierra County General Plan

Like the two other General Plans, the Sierra County General Plan addresses visual resources. The overall goals of the Sierra County General Plan are to protect and preserve important scenic resources in the County, and to protect visually sensitive areas by promoting and providing for aesthetic design in new development which reflects the customs and culture of the County (Sierra County 2012).

The Visual Element of the Sierra County General Plan contains goals and policies relevant to visual resources. The following goals and policies of the Visual Element are applicable to the Proposed Projects (Sierra County 2012):

GOAL 1: Protect and preserve important scenic resources in the County. Policy 1: Protect the visual quality of the County's scenic corridors (local and State).

Policy 2: Limit encroachments onto scenic highways to maintain safety and quality of driving and viewing experience through scenic corridors.

Policy 8: Protect important scenic resources.

Policy 9: Promote the protection of the visual integrity of streams and rivers.

12.4 Impact Assessment Methodology

The impact analysis for visual resources follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. The geographical scope of the impact analysis on visual resources is the area within and adjacent to the Project Area, both the area upstream of Englebright Dam and the Lower Yuba River area.

Visual resource impacts related to construction activities include leveling and grading or otherwise disturbing soil to rehabilitate, upgrade or develop new recreation facilities including creating areas for staging equipment and materials, access, and borrow or disposal sites. The evaluation of construction-related effects would only pertain to the YRDP. As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. As a result, construction-related impacts are not analyzed for the Narrows Project. Since there would be no difference in construction-related activities among the Proposed Projects and the alternatives, except for the No Project Alternative, potential construction impacts would be the same under all scenarios.

Effects related to operations could include visual appearance and colors of infrastructure as well as disturbances caused by maintenance activities such as vegetation removal. Overall, the impact

analyses rely on a qualitative assessment of potential effects that may occur at specific scenic resources including a scenic vista or in the viewshed of a state scenic highway; or if there is a substantial effect on scenic views or adding substantial nighttime light or glare. For the more qualitative analysis, the visual contrast of the proposed new facilities is determined by comparing their appearance to the conditions as described in the Environmental Setting section above.

The visual quality assessment conducted for FERC is the primary source used to assess impacts on visual resources in the area upstream of Englebright Dam, with supplemental information as appropriate from the sources described below. Since no visual quality assessment has previously been conducted for the Lower Yuba River area, a more qualitative analysis of visual resource impacts was conducted in the manner described in the preceding paragraph.

A desktop analysis was completed to collect and analyze data related to visual resources in the lower Yuba River area. Some of this data was used to supplement information on visual resources in the area upstream of Englebright Dam. For the purposes of this analysis, information related to visual resources was collected using the following sources:

- Yuba County General Plan
- Yuba County General Plan 2030 Draft Environmental Impact Report
- Nevada County General Plan
- Sierra County General Plan
- Narrows Project FLA

The focus of this impact analysis is on proposed physical changes to the environment that may occur due to proposed construction of facilities and changes in flows from project operations. The changing of the proposed FERC boundaries, while a part of the Proposed Project, would not by itself result in impacts on the physical environment.

As discussed in Chapter 4, Framework for Environmental Analysis, trends in flow-dependent habitat availability changes associated with the provision of 15.6 TAF from the YB/DS projects were evaluated for Alternative 1 in applicable reaches. Because the actual relative contribution of flow from the Middle Yuba River and South Yuba River watersheds and associated reservoir operations could vary, this impact analysis utilizes generalized trends in the hydrologic regimes and the general changes in flows modeled by NID (2023) as examples to characterize potential changes that could occur under Alternative 1. Because the intent of Alternative 1 is only to provide 15.6 TAF of water during April-May of Dry and Critical WYs, the evaluation of potential impacts in areas upstream of the YRDP under Alternative 1 focuses on changes that could occur during April and May of Dry and Critical WYs. The changes in flows identified with the reaches upstream of the YRDP were the basis on which indirect impacts on visual resources were assessed.

Although hydrological changes under the Proposed Projects or any of the alternatives may result in a visual change relative to the Existing Condition, there is no feasible way to precisely distinguish between the scale of these visual impacts based on quantitative differences in modeled hydrology. Accordingly, while this analysis considers general trends in modeled hydrology (see Chapter 5, Surface Water Resources), the corresponding visual changes are discussed qualitatively. As more precise comparisons of modeled hydrology are not necessary or helpful for

this analysis, this chapter does not use the Future Baseline. Instead, it evaluates all visual resource impacts relative to the Existing Condition.

12.4.1 Impact Indicators and Significance Criteria

For visual resources, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, the Proposed Projects would result in a significant impact on visual resources if they would:

d) **Impact VIS-1:** Have a substantial adverse effect on a scenic vista.

e) **Impact VIS-2:** Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

f) **Impact VIS-3:** Substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point).

g) **Impact VIS-4:** Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

These significance thresholds are also used to evaluate the potential indirect impacts of the alternatives on visual resources in areas upstream of the YRDP, as defined in Chapter 4.

12.5 Environmental Impact Analysis

12.5.1 Proposed Projects compared to the Existing Condition

12.5.1.1 Areas Upstream of Englebright Dam

YRDP Impact VIS-PP-1: Construction-related impacts on a Scenic Vista

A scenic vista is generally considered a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. Typical scenic vistas in the project area include locations where views of rivers, hillsides, and open space areas can be obtained (YCWA 2023a). Effects related to visual resources from construction activities typically include excavation, leveling and grading, or otherwise disturbing soil to create areas for staging equipment and materials, access, and borrow or disposal sites. These effects typically are confined to the construction site and immediate area. However, in some cases, there could be impacts on more distant views.

The VQO conducted by Yuba Water in 2012 identified six KOPs: the Sunset Vista Point, the Bullards Bar Trail, the Cottage Creek Boat Ramp, the Cottage Creek Parking Area, the New Bullards Bar Dam Overlook, and Marysville Road (YCWA 2023a). Figure 12.5-1 shows the view from Sunset Vista Point. Assessments for KOPs include distant views. Two of these KOPs—the Cottage Creek Boat Ramp and the Cottage Creek Parking Area—could be affected by proposed YRDP construction. As described in Chapter 2, Project Description, Cottage Creek improvements would consist of reconstruction of a portion of a campground that was burned in 2010, plus rehabilitation of an existing boat launch. However, these improvements would not significantly

alter the views from the Cottage Creek KOPs because visual changes associated with construction activities would be intermittent and temporary, and because Yuba Water would implement the *Visual Resources Management Plan*, as explained below.



Figure 12.5-1. View from Sunset Vista Point.

The proposed YRDP includes implementation of a *Visual Resources Management Plan* that requires the following:

- Selective vegetation removal to maintain the Sunset Vista Point viewing opportunity. Activities involving vegetation removal include: removing small trees and high shrubs from downslope vegetation zone, removal of larger trees further downslope, and selective thinning of trees up to 300 feet east of the existing vista point and 300 feet downhill from the existing trail. A Yuba Water landscape architect shall assist in marking vegetation for removal. This would minimize adverse visual impacts of vegetation removal.
- Paint the Emerald Cove Marina fuel tanks gray/green or brown to blend with the surroundings, so as not to stand out as prominently in the predominantly rural landscape.
- Paint New Bullards Bar Dam control gate and housings in the color of the existing steel structures on the dam (preferably green) so they blend with the surroundings and not stand out so prominently.
- Prepare and implement Visual Resource Protection Plans for projects on NFS land (see below).

Implementation of these measures would result in long-term beneficial impacts to scenic vistas at these KOPs.

The *Visual Resources Management Plan,* along with the measures described above, sets forth a Visual Review Process for activities on NFS land, which is where many of the existing and proposed recreation facilities are located. The central component of this process is the preparation of a Visual Resource Protection Plan if determined by the Forest Service that a project on NFS

land would require one. The Visual Resource Protection Plan would identify nearby viewpoints from which the public may view the project and describe measures incorporated within the project that will help protect, enhance, or mitigate the impacts to the visual environment. Upon review by the Forest Service and revisions as required, the final Visual Resource Protection Plan shall be approved by the Forest Service.

For these reasons, with implementation of the *Visual Resources Management Plan*, the proposed YRDP would not cause significant adverse changes to scenic vistas in the area. As a result, impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-2: Operations-related Impacts on a Scenic Vista

For the purposes of this analysis, YRDP "operations" are distinguished into three types: dam and hydroelectric facility operations, routine O&M, and recreation facility operations.

YRDP dam and hydroelectric facility operations under the Proposed Projects would not significantly differ from those under the Existing Condition, and therefore would not significantly impact scenic vistas. Visual changes associated with New Bullards Bar Reservoir levels would not be significant, as discussed further under YRDP Impact VIS-PP-6.

Visual effects related to continued YRDP routine O&M under the Proposed Projects would include changes in visual appearance and colors of infrastructure and disturbances caused by maintenance activities such as vegetation removal. These visual impacts already occur under existing O&M and would not significantly change under the proposed YRDP operations. For facilities that are not on NFS lands, O&M would have impacts that are confined to the facilities; no scenic vistas from identified KOPs would be affected.

The O&M of existing and new recreation facilities would have impacts that are confined to the facilities. These activities would not be visible from the KOPs, since existing vegetation would screen such activities. In addition, Yuba Water proposes to implement the *Visual Resources Management Plan,* which includes actions intended to improve scenic vistas, as explained for YRDP Impact VIS-PP-1 above.

For these reasons, YRDP operations under the Proposed Projects would not cause significant and adverse changes in scenic vistas, and in some cases, would implement changes intended to improve scenic vistas. As a result, impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-3: Construction-related impacts on a Scenic Resource within a State Scenic Highway

Portions of State Highway 49 are either designated or eligible for designation as a state scenic highway within the vicinity of the YRDP (Caltrans 2024). YRDP construction would not affect scenic resources within the officially designated segment or eligible state scenic highway segments, as none of the areas in which YRDP construction would occur are visible from these highway segments. As a result, **no impact** would occur, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-4: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP operations, including routine O&M, under the Proposed Projects would not affect scenic resources within the officially designated segment or eligible state scenic highway segments, as operations would not occur or be visible from the highway. As a result, **no impact** would occur, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-5: Construction-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

YRDP construction activities, particularly ground disturbing activities, have the potential to impact the visual character or quality of a site and its surroundings. Most of these impacts would be temporary, mainly involving the placement of construction equipment and materials. These items would be removed once construction work is completed. Information specific to proposed facilities is provided below:

- At New Colgate Powerhouse, construction of the TDS would not involve significant earthwork, and existing undisturbed areas would remain undisturbed.

- At the Our House Diversion Dam, installation of a new fish release outlet pipe would not involve significant earthwork, and existing undisturbed areas would remain undisturbed. Temporary lowering of water levels behind the dam would occur during construction, potentially exposing unvegetated land ("bathtub ring"). This effect would disappear once water levels are restored to pre-construction conditions.

- At the Log Cabin Diversion Dam, installation of a new fish release outlet pipe would not involve significant earthwork, and existing undisturbed areas would remain undisturbed. Temporary lowering of water levels behind the dam would occur during construction. Lowering of water levels behind the dam would occur during construction, potentially exposing unvegetated land. This effect would disappear once water levels are restored to pre-construction conditions.

- At the Lohman Ridge Diversion Tunnel, installation of a new intake gate would not involve significant earthwork, and existing undisturbed areas would remain undisturbed.

Construction of the proposed new recreation facilities, and improvements to existing facilities, on or near New Bullards Bar Reservoir would most likely affect the existing visual landscape. Ground disturbance, including excavations for infrastructure, would be part of construction activities. The YRDP relicensing application includes several plans that would address construction effects on visual resources, including the *Erosion and Sediment Control Plan* and the *Integrated Vegetation Management Plan*. Among the measures in these plans that would address construction impacts are the following:

Integrated Vegetation Management Plan

- Yuba Water will evaluate areas within the FERC Project Boundary on a site-by-site basis to determine if revegetation is necessary or appropriate. In general, areas subject to revegetation include, but are not limited to: areas over 0.5-ac treated for non-native invasive plants, construction sites and other areas subject to ground disturbance, and sites subject to Project O&M, including improvements, erosion control, and effects to vegetated areas that will not be paved or covered, so that construction impacts on vegetation would be remediated.
- For sites on NFS land, Yuba Water will use seed mixes that contain only native plant species that meet Forest Service standards. Larger sites will typically be replanted with a mixture of native trees, shrubs, and forbs. The intent is to provide vegetation appropriate to the existing visual landscape.
- At Project recreation sites located on NFS land within the FERC Project Boundary, vegetation management will be conducted with the goals of tree stand improvement, view enhancement, and removal of hazard trees. Vegetation management activities include the removal of vegetation, hazardous branches, and hazard trees to facilitate recreation activities.

Erosion and Sediment Control Plan

- For new construction, temporary erosion prevention and control measures will be implemented. These measures will be based on local, state, and federal permit requirements and BMPs for NFS land and Yuba Water's BMPs, including the development of a SWPPP. This would minimize erosion of soils and its visual impacts.

In addition, as previously described, the *Visual Resources Management Plan* contains actions to reduce the visual impacts of construction work. Compliance with these plans and all necessary permits and approvals for the work would minimize effects on visual resources typically associated with construction activities such as vegetation removal and ground disturbance.

Thus, YRDP construction under the Proposed Projects would result in only short-term and temporary visual changes that would not substantially and adversely affect existing visual character or quality. Impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-6: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

As explained above, under the proposed YRDP, Yuba Water would continue various routine O&M activities that are already occurring under the Existing Condition, and these activities would not result in significant changes to existing visual character or quality.

Yuba Water has the responsibility to conduct maintenance activities at its recreation facilities to keep permanent assets in an acceptable condition, which typically includes repairs, painting, and replacement of minor parts and minor structural components (YCWA 2014). Such activities are

small-scale and have little impact on the visual landscape. However, under the proposed YRDP, Yuba Water would implement major rehabilitation activities that would result in more significant visual changes. Specifically, Yuba Water would implement the *Recreation Facilities Plan*, which would require implementation of the following actions to reduce visual impacts of recreation facilities and activities:

- Yuba Water has an Operating Plan that states Yuba Water will maintain standards for cleaning, operating, and maintaining the facilities on NFS land consistent with current Forest Service national and National Forest-specific standards and policies. It includes sub-sections addressing routine maintenance of the facilities, which would ensure that facilities would not deteriorate to an extent of being detrimental to views.
- Major recreation enhancement work generally involves a three-step planning and implementation process: 1) site planning that consists of a Design Narrative that describes any rehabilitation and new construction and design criteria that includes type and color of materials and accessibility; 2) a Site Development Plan and a Construction Plan that describes proposed enhancements, measures to avoid impacts to water quality and sensitive resources, and appropriate erosion and sedimentation control measures; and 3) contracting and construction. "Sensitive resources" include, but are not necessarily limited to, wetlands, culturally sensitive sites, critical wildlife habitats, and sensitive botanical sites.
- Specific measures for vegetation management at Project recreation facilities, including non-native invasive plant management, are discussed in Yuba Water's *Integrated Vegetation Management Plan*, which is included in the new license and mentioned above.

With respect to changes in hydrological operations, the proposed YRDP would not significantly change the visual character or quality of the Project Area relative to the Existing Condition.

As described in Chapter 2, Project Description, New Bullards Bar Reservoir collects runoff from rain and snow melt during the winter and spring seasons and releases water during the summer and fall seasons. Changes in operations affect water levels at New Bullards Bar Reservoir. Typically, as the dry season progresses, water levels at the reservoir become lower as water is released to serve the Yuba Water Member Units and to comply with regulatory requirements, while no water enters the reservoir to replace it. The result is that bare land becomes visible above the water line, often referred to as a "bathtub ring" (see Figure 12.2-3), which is an adverse visual effect. This occurs every year at the reservoir, and the effect disappears during the wet season unless drought conditions occur. Drought conditions are beyond the control of Yuba Water; however, operational changes to releases from New Bullards Bar Reservoir are within Yuba Water's control.

As described in Chapter 5, the drawdown of New Bullards Bar Reservoir, would not substantially change from its Existing Condition. As a result, associated changes to the reservoir appearance also would not be substantial.

Englebright Reservoir, like New Bullards Bar Reservoir, experiences changes in operations that affect water levels. The result is that Englebright Reservoir may also experience a "bathtub ring" effect. While operations of Englebright Reservoir and Dam are conducted by USACE and therefore are outside the control of Yuba Water, any changes would be temporary similar to New

Bullards Bar Reservoir and would not substantially degrade the existing visual character or quality of public views of the reservoir or its surroundings.

Moreover, changes in flows under the proposed YRDP would not adversely affect the visual quality of other waterbodies in the Project Area, including the North Yuba River, which is being considered for federal Wild and Scenic River status, and the South Yuba River, which is designated as a California Wild and Scenic River (YCWA 2023a), because flows under the Proposed Projects would vary little from current flows (see Chapter 5, Surface Water Resources). YRDP operations under the Proposed Projects scenario would not result in the inundation of any reach of the North Yuba River, as no expansion of the existing storage capacity of New Bullards Bar Reservoir is proposed.

The only other areas that would experience a change in existing visual character are associated with the *Sediment Management Plan* activities, including the three proposed disposal sites, where the dredged sediments and sand would be deposited, and the Celestial Valley Mitigation Site, where native vegetation would be planted. There are no publicly accessible vantage points of Disposal Site 1; however, Disposal Site 2, Disposal Site 3, and the Celestial Valley Mitigation Site can be viewed by the public from abutting roads. Annual grassland, riparian forest, and wetland features are the main biological communities present at Disposal Site 2 and the Celestial Valley Mitigation Site. Ponderosa pine forest makes up the main biological community at Disposal Site 3.

At Disposal Site 2 and 3, the vegetation would be expected to regrow after the laying of sediments, and the sites would be revegetated as part of the erosion control measures. At the Celestial Valley Mitigation Site, the revegetation measures would improve the aesthetics of the site by planting native vegetation in an area that was burned and by removing nonnative Himalayan blackberry.

For the reasons above, YRDP operations under the Proposed Projects would not substantially and adversely impact the existing visual character or quality. Accordingly, the impact would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-7: Introduction of a New Source of Substantial Light and Glare during Construction

YRDP construction activities may involve the use of lighting. Although most construction work is anticipated to occur during the daytime, nighttime construction work may be necessary during certain construction phases. Nighttime sensitive receptors would include motorists traveling through (YCWA 2023a).

Lighting impacts would be temporary when they occur. Any planned night work that would require the use of lights would be infrequent, short in duration, and limited to specific construction areas/projects. In addition, construction activities that may require nighttime lighting would be located away from private residences, and motorists and recreation facility users would not be substantially exposed to such lighting.

However, due to the rural character of the Project Vicinity and the absence of other major light sources that may affect the viewshed, the possibility of nighttime construction activities to create sources of light and glare would be potentially significant. Mitigation Measure MM-VIS-1 would

minimize the amount of lighting that could reach sensitive receptors during construction activities. As a result, the impact would be **less than significant with mitigation incorporated**.

Mitigation Measure

MM-VIS-1. To reduce nighttime light and glare effects on sensitive receptors during construction, Yuba Water will ensure that the following measures are implemented as defined below:

- All nighttime lighting will be shielded and directed downward and in the opposite direction from sensitive receptors.
- Lighting shall be low intensity, where feasible, and located and designed to minimize direct view of light sources and diffusers, and to minimize halo and spillover effects.

Timing: During construction activities.

Responsibility: Yuba Water and its construction contractor(s).

YRDP Impact VIS-PP-8: Introduction of a New Source of Substantial Light and Glare during Operations

Routine O&M and dam/hydroelectric operations would not involve the introduction of new lighting. The YRDP *Recreation Facilities Plan* proposes the installation of solar-powered lights at entrance station kiosks at recreation facilities and a light post at the new Dark Day RV Dump Station. The entrance station kiosk lights would be small in scale and focused downward on the kiosk. The post at the Dark Day RV Dump Station would be a single light post focused down on the dump station facility to allow for safe public nighttime use. These lighting fixtures are intended to be small-in-scale (single lights), localized at specific site furnishings, and focused downward on the intended task furnishings. The light and glare from these single light fixtures would not be readily visible outside the localized areas where the single lights would be located.

No other lighting sources associated with YRDP operations would be installed. As a result, the impact would be **less than significant,** and no CEQA mitigation would be required.

12.5.1.2 Lower Yuba River

YRDP Impact VIS-PP-9: Operations-related Impacts on a Scenic Vista

As noted, no viewsheds with a high viewer sensitivity have been identified previously for the lower Yuba River. The lower Yuba River area is limited in both public access, so views are not available. As a result, **no impact** would occur, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-10: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP operational impacts would be limited to water releases that reach the lower Yuba River. There are no eligible or designated State Scenic Highways in the lower Yuba River. As a result, **no impact** would occur, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-11: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

There are no YRDP facilities in the lower Yuba River area; therefore, no impacts from routine O&M or recreation facility operations would occur. YRDP dam and hydroelectric operations would involve water releases that may affect the visual appearance of the lower Yuba River. However, as described in Chapter 5, Surface Water Resources, lower Yuba River flows would not significantly change under the Proposed Projects scenario. Because of this, YRDP dam and hydroelectric operations would not impact the existing visual character or quality of the lower Yuba River.

FERC Article 412, described in Table 2.5-1, would require implementation of a Lower Yuba River Riparian Restoration Plan as part of the Proposed Projects, one provision of which would be the planting of at least 100 acres total of riparian vegetation on the floodplain of the lower Yuba River, at no fewer than four sites. This requirement would further improve the visual character of the lower Yuba River, providing a beneficial effect. Overall, impacts are considered **less than significant**, and no CEQA mitigation would be required.

YRDP Impact VIS-PP-12: Introduction of a New Source of Substantial Light and Glare during Operations

There are no YRDP facilities in the lower Yuba River. Because of this, no new sources of light or glare would be introduced by YRDP operations in the lower Yuba River. **No impact** would occur, and no CEQA mitigation would be required.

Narrows Impact VIS-PP-1: Operations-related Impacts on a Scenic Vista

As noted under YRDP Impact VIS-PP-9, no viewsheds with a high viewer sensitivity have been identified previously for the Narrows Project Area, and public access along the lower Yuba River is limited. As a result, there would be **no impact** on scenic vistas, and no CEQA mitigation would be required.

Narrows Impact VIS-PP-2: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

Narrows Project operational impacts would be limited to water releases that reach the lower Yuba River. There are no eligible or designated scenic highways in the vicinity of the Narrows Project or the lower Yuba River. As a result, **no impact** would occur, and no CEQA mitigation would be required.

Narrows Impact VIS-PP-3: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

As noted, there are no notable scenic resources in the Narrows Project Area. The facilities are located on Yuba Water-owned lands, which are not visible from any public viewpoints, and mostly located at the bottom of the river canyon. The facilities located above the river canyon (i.e., the top of the tram) are not viewable from any public viewpoints (i.e., no roads or residences in the viewshed).

As described in Chapter 2, Project Description, under the Proposed Narrows Project, Yuba Water would continue various routine O&M activities that are already occurring under the Existing Condition, and these activities would not result in significant changes to existing visual character or quality. Narrows Project facilities are currently visited several times a week for O&M activities that identify and correct any problems. Yuba Water conducts annual mechanical and electrical inspections and maintenance at Narrows 1 Powerhouse to verify the structural and/or functional integrity of the works and to identify conditions that might disrupt operations. Yuba Water also implements routine maintenance activities to ensure safe and reliable operation of Narrows Project facilities and to protect worker and public health and safety and environmental resources. Activities include re-painting the exterior of the powerhouse, penstocks, surge chamber (i.e., standpipe), tram house, and tram as needed. Vegetation management, primarily trimming by hand and using herbicides, is implemented by Yuba Water at Narrows Project works, as needed. These activities do not substantially affect the visual landscape in the Narrows Project Area and are not expected to do so in the future.

Hydroelectric operations proposed to be conducted by the Narrows Project with its relicensing would not affect the existing visual landscape in the Narrows Project Area, nor would it affect landscapes downstream along the lower Yuba River, as they are coordinated with YRDP operations. Under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet the proposed YRDP requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, **no impact** would occur, and no CEQA mitigation would be required.

Narrows Impact VIS-PP-4: Introduction of a New Source of Substantial Light and Glare during Operations

There are no proposed modifications to the Narrows Project facilities that would introduce a new source of substantial light and glare. As a result, **no impact** would occur, and no CEQA mitigation would be required.

12.5.2 Alternative 1 compared to the Existing Condition12.5.2.1 Areas Upstream of Englebright Dam

YRDP Impact VIS-Alt1-1: Construction-related Impacts on a Scenic Vista

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects and would therefore have the same associated impacts to scenic vistas. For the reasons explained above for YRDP Impact VIS-PP-1, with implementation of the *Visual Resources Management Plan*, YRDP construction under Alternative 1 would not cause significant adverse changes to scenic vistas in the area. As a result, impacts would be **less than significant**.

YRDP Impact VIS-Alt1-2: Operations-related Impacts on a Scenic Vista

YRDP operational impacts on vista points under Alternative 1 would be similar to those described under YRDP Impact VIS-PP-2 because Alternative 1 would include the same non-flow YRDP operations and maintenance activities as the Proposed Projects and because the relatively minor differences in flow-based operations under Alternative 1 and the Proposed Projects would not

translate to an observable difference in a scenic vista. For the reasons explained above for YRDP Impact VIS-PP-2, YRDP operations under Alternative 1 would not cause significant and adverse changes in scenic vistas, and in some cases, would implement changes intended to improve scenic vistas. As a result, impacts would be **less than significant**.

YRDP Impact VIS-Alt1-3: Construction-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects and would therefore have the same associated impacts to scenic resources within a state scenic highway. For the reasons explained above for YRDP Impact VIS-PP-3, **no impact** would occur.

YRDP Impact VIS-Alt1-4: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP operations under Alternative 1 would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impact VIS-PP-4, these operations would not be visible from a state scenic highway. As a result, **no impact** would occur.

YRDP Impact VIS-Alt1-5: Construction-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects and would therefore have the same associated impacts to existing visual character or quality. For the reasons explained above for YRDP Impact VIS-PP-5, YRDP construction under Alternative 1 would result in only short-term and temporary visual changes that would not substantially and adversely affect existing visual character or quality, and impacts would therefore be **less than significant**.

YRDP Impact VIS-Alt1-6: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Visual character effects related to YRDP operations under Alternative 1, relative to the Existing Condition, would be similar to those described under YRDP Impact VIS-PP-6. The non-flow YRDP O&M activities would be the same under Alternative 1 as with the Proposed Projects scenario, and the minor differences in New Bullards Bar Reservoir levels under Alternative 1 and the Proposed Projects would not lead to an observable difference in the "bathtub ring" effect, as indicated in the reservoir levels calculated in Chapter 5, Surface Water Resources.

The additional non-flow license conditions proposed under Alternative 1 would result in higher water surface elevations at Englebright Reservoir at the end of the peak recreation season (August 25 through October 15), relative to the Existing Condition (see Chapter 5, Surface Water Resources). This would have a beneficial effect on the visual character of the reservoir and reservoir shoreline by reducing the "bathtub ring" effect at Englebright Reservoir.

For these reasons, impacts of YRDP operations under Alternative 1 on existing visual character or quality would be **less than significant**.

YRDP Impact VIS-Alt1-7: Introduction of a New Source of Substantial Light and Glare during Construction

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects and would therefore have the same associated impacts relating to light and glare. For the reasons explained above for YRDP Impact VIS-PP-7, the possibility of nighttime YRDP construction activities to create sources of light and glare would be potentially significant; however, with implementation of Mitigation Measure MM-VIS-1, this impact would be **less than significant with mitigation incorporated**.

YRDP Impact VIS-Alt1-8: Introduction of a New Source of Substantial Light and Glare during Operations

The lighting impacts associated with YRDP operations under Alternative 1 would be the same as those under the Proposed Projects because Alternative 1 would implement the same *Recreation Facilities Plan* included in the proposed YRDP and would not include any other lighting sources associated with YRDP operations. For the reasons explained above for YRDP Impact VIS-PP-8, this impact would be **less than significant**.

12.5.2.1 Lower Yuba River

YRDP Impact VIS-Alt1-9: Operations-related Impacts on a Scenic Vista

YRDP operations under Alternative 1 would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impact VIS-PP-9, these operations would not be visible from a public viewpoint. As a result, **no impact** would occur.

YRDP Impact VIS-Alt1-10: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP operations under Alternative 1 would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impact VIS-PP-10, these operations would not be visible from a state scenic highway. As a result, **no impact** would occur.

YRDP Impact VIS-Alt1-11: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Visual character effects related to YRDP operations under Alternative 1 would be similar to those under the Proposed Projects because Alternative 1 would include the same non-flow operations and maintenance activities as the Proposed Projects and because the relatively minor differences in flow-based operations under Alternative 1 and the Proposed Projects would not translate to an observable difference in existing visual character or quality. For the reasons explained above for YRDP Impact VIS-PP-11, YRDP operations under Alternative 1 would not cause significant and adverse changes in visual character, and in some cases, would implement changes intended to improve visual character. As a result, impacts would be **less than significant**.

YRDP Impact VIS-Alt1-12: Introduction of a New Source of Substantial Light and Glare during Operations

As explained above for YRDP Impact VIS-PP-12, there are no YRDP facilities in the lower Yuba River. No new sources of light or glare would be introduced by YRDP operations under Alternative 1. As a result, Alternative 1 YRDP operations would have **no impact** related to light and glare.

Narrows Impact VIS-Alt1-1: Operations-related Impacts on a Scenic Vista

Narrows Project operations under Alternative 1 would occur in the same locations as those under the Proposed Projects. As explained above under Narrows Impact VIS-PP-1, these operations would not be visible from a public viewpoint. As a result, **no impact** would occur.

Narrows Impact VIS-Alt1-2: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

Narrows Project operations under Alternative 1 would occur in the same locations as those under the Proposed Projects. As explained above under Narrows Impact VIS-PP-2, these operations would not be visible from a state scenic highway. As a result, **no impact** would occur.

Narrows Impact VIS-Alt1-3: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Visual character effects related to Narrows Project operations under Alternative 1 would be the same as those under the Proposed Projects because Narrows Project non-flow operations and maintenance activities would be the same under Alternative 1 and the Proposed Projects and because the new Narrows Project license under Alternative 1 would not include additional flow requirements. For the reasons explained above for Narrows Impact VIS-PP-3, Narrows Project operations under Alternative 1 would have **no impact** on existing visual character or quality.

Narrows Impact VIS-Alt1-4: Introduction of a New Source of Substantial Light and Glare during Operations

Alternative 1 does not include proposed modifications to the Narrows Project facilities that would introduce a new source of substantial light and glare. As a result, Alternative 1 Narrows Project operations would have **no impact** related to light and glare.

12.5.2.2 Reaches Upstream of the YRDP

Indirect Impact VIS-Alt1-1: Indirect impacts of YB/DS operations on visual resources in reaches upstream of the YRDP

As discussed in Chapter 3, Alternative 1 would include the release of 15.6 TAF of flows from the YB/DS projects during the months of April and May in Dry and Critical WYs and are analyzed at a programmatic level.

Depending on the water release strategy for the 15.6 TAF, increases in flows would occur in the Middle Yuba River, Fordyce Creek, the South Yuba River, and/or Canyon Creek in April and May

in Dry and Critical WYs. Under these conditions, flows in these streams would be enhanced during those two months before reverting to their typical conditions. Public views of these streams would be limited mainly to views from bridges on State Highway 49 that cross the Middle Yuba River and South Yuba River, from South Yuba River State Park, and from certain points of Interstate 80. Increases in flows would occur infrequently and would not be expected to result in substantial adverse visual changes.

Public views are also available at the recreational facilities at the reservoirs, particularly Jackson Meadows Reservoir, Fordyce Lake, and Lake Spaulding. As has been discussed in this chapter concerning New Bullards Bar Reservoir, water levels at the reservoirs become lower as the dry season progresses. The result is that bare land becomes visible above the water line, often referred to as a "bathtub ring." This occurs every year, and the effect disappears during the wet season unless drought conditions occur. The proposed 15.6 TAF releases could potentially exacerbate this condition at the reservoirs, particularly since they would occur during Dry and Critical WYs. However, the visual impacts of these releases as they relate to the "bathtub ring" effect would be limited because they would only occur in certain years and because reservoir levels would already be low in the types of WYs during which the releases would occur. Moreover, any changes would be temporary and are unlikely to substantially degrade the existing visual character or quality of public views of the reservoir or its surroundings. Therefore, indirect visual impacts of Alternative 1 are considered **less than significant**.

12.5.3 Alternative 2 compared to the Existing Condition

12.5.3.1 Areas Upstream of Englebright Dam

YRDP Impact VIS-Alt2-1: Construction-related Impacts on a Scenic Vista

YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects and would therefore have the same associated impacts to scenic vistas. For the reasons explained above for YRDP Impact VIS-PP-1, with implementation of the *Visual Resources Management Plan*, YRDP construction under Alternative 2 would not cause significant adverse changes to scenic vistas in the area. As a result, impacts would be **less than significant**.

YRDP Impact VIS-Alt2-2: Operations-related Impacts on a Scenic Vista

Impacts on vista points from non-flow YRDP operations under Alternative 2 would be the same as those described under YRDP Impact VIS-PP-2, because Alternative 2 would include the same non-flow YRDP operations and maintenance activities as the Proposed Projects. As to flow-based YRDP operations, Alternative 2 would result in potentially greater flows on some streams, but greater releases from New Bullards Bar Reservoir may have some impacts on streams upstream of the reservoir. However, these potential upstream changes would not be visible from scenic vistas identified in this DEIR. For these reasons, impacts on scenic vistas from YRDP operations under Alternative 2 would be **less than significant**.

YRDP Impact VIS-Alt2-3: Construction-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects and would therefore have the same associated impacts to scenic resources within a state scenic highway. For the reasons explained above for YRDP Impact VIS-PP-3, **no impact** would occur.

YRDP Impact VIS-Alt2-4: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP operations under Alternative 2 would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impact VIS-PP-4, these operations would not be visible from a state scenic highway. As a result, **no impact** would occur.

YRDP Impact VIS-Alt2-5: Construction-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects and would therefore have the same associated impacts to existing visual character or quality. For the reasons explained above for YRDP Impact VIS-PP-5, YRDP construction under Alternative 2 would result in only short-term and temporary visual changes that would not substantially and adversely affect existing visual character or quality, and impacts would therefore be **less than significant**.

YRDP Impact VIS-Alt2-6: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Visual character effects related to YRDP operations under Alternative 2, relative to the Existing Condition, would be similar to those described under YRDP Impact VIS-PP-6. The non-flow YRDP operations and maintenance activities would be the same under Alternative 2 as with the Proposed Projects scenario.

As to flow-based YRDP operations, Alternative 2 would include greater releases from New Bullards Bar Reservoir. As explained in Chapter 3, Alternatives, the end-of-September target storage level would be reduced from 650,000 ac-ft to 600,000 ac-ft during wetter years and from 440,000 ac-ft to 400,000 ac-ft during drier years. These changes in total storage could make the existing "bathtub ring" effect more pronounced, but mainly in drier years, and the effect would not be substantially different from historical conditions.

For these reasons, YRDP operational impacts on visual character or quality under Alternative 2, when compared with the Existing Condition, would be **less than significant**.

YRDP Impact VIS-Alt2-7: Introduction of a New Source of Substantial Light and Glare during Construction

YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects and would therefore have the same associated impacts relating to light and glare. For the

reasons explained above for YRDP Impact VIS-PP-7, the possibility of nighttime YRDP construction activities to create sources of light and glare would be potentially significant; however, with implementation of Mitigation Measure MM-VIS-1, this impact would be **less than significant with mitigation incorporated**.

YRDP Impact VIS-Alt2-8: Introduction of a New Source of Substantial Light and Glare during Operations

The lighting impacts associated with YRDP operations under Alternative 2 would be the same as those under the Proposed Projects because Alternative 2 would implement the same *Recreation Facilities Plan* included in the proposed YRDP and would not include any other lighting sources associated with YRDP operations. For the reasons explained above for YRDP Impact VIS-PP-8, this impact would be **less than significant**.

12.5.3.2 Lower Yuba River

YRDP Impact VIS-Alt2-9: Operations-related Impacts on a Scenic Vista

YRDP operations under Alternative 2 would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impact VIS-PP-9, these operations would not be visible from a public viewpoint. As a result, **no impact** would occur.

YRDP Impact VIS-Alt2-10: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

YRDP operations under Alternative 2 would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impact VIS-PP-10, these operations would not be visible from a state scenic highway. As a result, **no impact** would occur.

YRDP Impact VIS-Alt2-11: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Visual character effects related to YRDP operations under Alternative 2 would be similar to those described under YRDP Impact VIS-PP-11. The non-flow YRDP operations and maintenance activities would be the same under Alternative 2 as with the Proposed Projects scenario.

As to flow-based YRDP operations, Alternative 2 would include additional water releases that may affect the visual appearance of the lower Yuba River. While increased flows under Alternative 2 would be observable, the visual change would not constitute a significant and adverse change to existing visual character or quality.

For these reasons, YRDP operations under Alternative 2 would not cause significant and adverse changes in visual character or quality, and in some cases, would implement changes intended to improve visual character. As a result, impacts would be **less than significant**.

YRDP Impact VIS-Alt2-12: Introduction of a New Source of Substantial Light and Glare during Operations

As explained above for YRDP Impact VIS-PP-12, there are no YRDP facilities in the lower Yuba River. No new sources of light or glare would be introduced by YRDP operations under Alternative 2. As a result, Alternative 2 YRDP operations would have **no impact** related to light and glare.

Narrows Impact VIS-Alt2-1: Operations-related Impacts on a Scenic Vista

Narrows Project operations under Alternative 2 would occur in the same locations as those under the Proposed Projects. As explained above under Narrows Impact VIS-PP-1, these operations would not be visible from a public viewpoint. As a result, **no impact** would occur.

Narrows Impact VIS-Alt2-2: Operations-related Impacts on a Scenic Resource within a State Scenic Highway

Narrows Project operations under Alternative 2 would occur in the same locations as those under the Proposed Projects. As explained above under Narrows Impact VIS-PP-2, these operations would not be visible from a state scenic highway. As a result, **no impact** would occur.

Narrows Impact VIS-Alt2-3: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Visual character effects related to Narrows Project operations under Alternative 2 would be the same as those under the Proposed Projects described under Narrows Impact VIS-PP-3. Narrows Project operations under Alternative 2 would occur in the same locations as those under the Proposed Projects, and non-flow operations and maintenance activities would be the same under Alternative 2 and the Proposed Projects.

Under Alternative 2, Yuba Water would continue to coordinate flow-based Narrows Project operations to meet YRDP requirements. The impacts of YRDP flow-based operations are addressed under YRDP Impact Alt2-11. The Narrow Project license would not include any additional flow requirements. For these reasons, Narrows Project operations under Alternative 2 would have **no impact** on existing visual character or quality.

Narrows Impact VIS-Alt2-4: Introduction of a New Source of Substantial Light and Glare during Operations

Alternative 2 does not include proposed modifications to the Narrows Project facilities that would introduce a new source of substantial light and glare. As a result, Alternative 2 Narrows Project operations would have **no impact** related to light and glare.

12.5.4 No Project Alternative compared to the Existing Condition

12.5.4.1 Areas Upstream of Englebright Dam

YRDP Impacts VIS-NP-1, VIS-NP-3, VIS-NP-5, and VIS-NP-7: Construction-related Impacts on Visual Resources

No YRDP construction would occur under the No Project Alternative. Because of this, there would be **no impacts** involving scenic vistas (VIS-NP-1), scenic resources within a state scenic highway (VIS-NP-3), existing visual character or quality (VIS-NP-5), or new sources of light or glare (VIS-NP-7) from construction activities.

YRDP Impacts VIS-NP-2, VIS-NP-4, VIS-NP-6, and VIS-NP-8: Operations-related Impacts on Visual Resources

Under the No Project Alternative, Yuba Water would continue YRDP operations and maintenance activities that are already occurring under the Existing Condition, except for hydropower generation. Ceasing hydropower generation and continuing existing operations would not result in any substantial visual changes relative to the Existing Condition. Accordingly, YRDP operations under the No Project Alternative would have **no impacts** involving scenic vistas (VIS-NP-2), scenic resources within a state scenic highway (VIS-NP-4), existing visual character or quality (VIS-NP-6), or new sources of light or glare (VIS-NP-8).

12.5.4.2 Lower Yuba River

YRDP Impacts VIS-NP-9 and VIS-NP-10: Operations-related Impacts on Visual Resources

YRDP operations under the No Project Alternative would occur in the same locations as those under the Proposed Projects. As explained above under YRDP Impacts VIS-PP-9 and VIS-PP-10, these operations would not be visible from a public viewpoint or a state scenic highway. Accordingly, YRDP operations under the No Project Alternative would have **no impact** on scenic vistas (VIS-NP-9) or scenic resources within a state scenic highway (VIS-NP-10).

YRDP Impact VIS-NP-11: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Under the No Project Alternative, Yuba Water would continue YRDP operations and maintenance activities that are already occurring under the Existing Condition, except for hydropower generation. Ceasing hydropower generation and continuing existing operations would not result in any substantial visual changes relative to the Existing Condition. Accordingly, YRDP operations under the No Project Alternative would have **no impact** to existing visual character or quality.

YRDP Impact VIS-NP-12: Introduction of a New Source of Substantial Light and Glare during Operations

As explained above for YRDP Impact VIS-PP-12, there are no YRDP facilities in the lower Yuba River. No new sources of light or glare would be introduced by YRDP operations under the No

Project Alternative. As a result, there would be **no impact** related to light and glare associated with YRDP operations under the No Project Alternative.

Narrows Impacts VIS-NP-1 and VIS-NP-2: Operations-related Impacts on Visual Resources

Narrows Project operations under the No Project Alternative would occur in the same locations as those under the Proposed Projects. Ex explained above under Narrows Impacts VIS-PP-1 and VIS-PP-2, these operations would not be visible from a public viewpoint or a state scenic highway. Accordingly, Narrows Project operations under the No Project Alternative would have **no impacts** to scenic vistas (VIS-NP-1) or scenic resources within a state scenic highway (VIS-NP-2).

Narrows Impact VIS-NP-3: Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings

Under the No Project Alternative, Yuba Water would continue Narrows Project operations and maintenance activities that are already occurring under the Existing Condition, except for hydropower generation. Ceasing hydropower generation and continuing existing operations would not result in any substantial visual changes relative to the Existing Condition. Accordingly, Narrows Project operations under the No Project Alternative would have **no impact** to existing visual character or quality.

Narrows Impact VIS-NP-4: Introduction of a New Source of Substantial Light and Glare during Operations

The No Project Alternative does not include proposed modification to the Narrows Project facilities that would introduce a new source of substantial light and glare. As a result, Narrows Project operations under the No Project Alternative would have **no impact** related to light and glare.

12.6 Cumulative Impact Assessment

The purpose of this analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects. (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent Project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the cumulative impacts of the Proposed Projects and the alternatives. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. Only those projects that could affect recreational resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

12.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

The geographical scope for cumulative visual resource impact analysis can be broad, covering a county or several counties depending on the anticipated impacts. Table 4.9-1 in Chapter 4 lists

past, present, and reasonably foreseeable projects that may contribute cumulative impacts along with the Proposed Projects and the action alternatives. Some of these projects, such as Sites Reservoir and the Delta Conveyance Project, are in places that are not reasonably expected to have an impact on visual resources in the Project Area and vicinity. Therefore, the geographical scope of the cumulative impact analysis would be the Yuba River watershed. Within this geographical scope, only those projects that could affect visual resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of some of these projects is not expected to result in cumulatively considerable impacts on visual resources that could be affected by the Proposed Projects or the alternatives. For this reason, only the limited numbers of projects with the potential to cumulatively impact visual resources are presented below:

- Water Storage and Conveyance Projects
  - *Yuba-Bear, Upper Drum-Spaulding, and the Lower Drum Hydroelectric Projects (YB/DS relicensings)*
- Flood Control Projects
  - *NBB Dam ARC Spillway Project (ARC Spillway Project)*
- Ecosystem Restoration and Fisheries Improvement Projects
  - *North Yuba Forest Partnership*
  - *Yuba Foothills Healthy Forest Project*
  - *Upper Yuba Headwaters Forest Restoration Project*
  - *'Inimim Forest Restoration Project*
  - *Yuba Roadside Fuel Treatment Project*
  - *Yuba River Watershed Habitat Restoration Plan*
  - *Narrows 2 Large Woody Material Mitigation Plan (completed)*
  - *Timbuctoo Acquisition and Restoration Project*
  - *Upper Long Bar Habitat Restoration Project*
  - *Lower Long Bar Restoration Project*
- Other Local Projects in the Yuba Region
  - *Camptonville Biomass Plant*

These projects are described in Chapter 4, and their impacts related to visual resources are addressed below.

The YB/DS relicensing project has facilities similar to those of the YRDP, including recreation facilities. The YB/DS relicensing project would involve substantial construction projects, which may involve alterations to the visual landscape such as ground disturbance and tree removal. As

noted, the YB/DS relicensing project would involve substantial construction projects, which may involve alterations to the visual landscape such as ground disturbance and tree removal. However, it can be assumed that construction work would be similar to the Proposed Projects and would be subject to similar conditions imposed by FERC, including environmental measures and conditions similar to those attached to the existing YRDP license (see Chapter 2, Project Description). Moreover, these impacts would be geographically distinct from, and therefore would not cumulate with, visual changes resulting from the Proposed Projects. The YB/DS relicensing project is very distant from the lower Yuba River area. While operations of the YB/DS may affect water flows in the lower Yuba River, the YB/DS would have no impact on visual resources in that area.

The ARC Spillway Project was analyzed in a separate EIR (YCWA 2023a). The EIR noted that temporary visual impacts would occur, due mainly to generation of dust by construction activities. Mitigation was identified to reduce this impact, through implementation of FRAQMD Construction Phase Mitigation Measures to control dust emissions. The presence of construction equipment was another identified visual impact. Both construction impacts were considered significant and unavoidable, but they were also considered temporary impacts that would cease once construction work is completed. A potentially significant impact related to construction lighting was identified, but mitigation described in the EIR, mainly shielding and screening of nighttime lighting, would reduce this impact to a less-than-significant level. (YCWA 2023a). The ARC Spillway Project EIR identified permanent visual changes from Project components. While many of these changes would be confined to the existing spillway area, they also include alterations to an adjacent hillside, relocation of Marysville Road and an existing scenic overlook, and a permanent soil and rock disposal area that would involve tree removal (YCWA 2023a). Impacts on views from the KOPs were identified, but these impacts would be less than significant with the implementation of mitigation measures described in the EIR – the painting of structures so that they blend in with their surrounding and the revegetation of soil and rock disposal area side slopes. Light and glare impacts from operations were considered less than significant and requiring no mitigation. No other significant visual resource impacts were identified (YCWA 2023a).

Projects in the upper Yuba River Watershed include the first five projects under the Ecosystem Restoration and Fisheries Improvement Projects listed above. These projects are predominantly forest thinning projects that would not substantially alter the predominant forested landscape. The ‘Inimim Forest Restoration Project seeks to restore more than 1,000 acres of forest habitat. The forest thinning projects would not substantially alter the predominant forested landscape. Many of these projects are designed to reduce fuels for potential wildfires that could damage or destroy landscapes (see Chapter 18, Wildfire). As noted, the ‘Inimim Forest Restoration Project seeks to restore more than 1,000 acres of forest habitat, which would have a positive effect on visual resources.

The Camptonville Biomass Plant is a proposed five-megawatt biomass plant that would be located in Camptonville, outside the Project Area. It is expected that Camptonville Biomass Plant construction activities would be confined to the former sawmill site on which that project is proposed to be constructed and therefore would not alter the natural landscape in the area. Some of the forest thinning projects could potentially be visible from State Highway 49, an eligible State scenic highway. However, as none of the activities under the Proposed Projects would be visible from State scenic highways, the Proposed Projects would not contribute to a cumulative impact to those resources.

Projects in the Lower Yuba River Watershed include the last five projects under the Ecosystem Restoration and Fisheries Improvement Projects listed above. These projects are predominantly fish habitat restoration projects that would mainly involve work within the Yuba River floodplain. However, these projects also include restoration of riparian vegetation, which would have an impact on visual resources along the Yuba River. The Narrows 2 Large Woody Material Mitigation Plan involved the placement of pieces of LWM at three locations along the lower Yuba River to provide benefits to a variety of salmonid lifestages. This project has been completed.

As discussed above, the YRDP would have impacts on visual resources. These are associated mainly with the construction of new recreation facilities. Most of these impacts were considered less than significant. The one potentially significant impact was associated with construction lighting, for which a mitigation measure was identified that would reduce impacts to a level that would be less than significant. The Narrows Project does not propose any construction, and proposed changes in operations would not affect visual resources. In summary, the projects discussed above would vary in their visual effects. The main visual impact would be provided by the ARC Spillway; however, an EIR analysis indicated that visual resource impacts, with mitigation, would be less than significant. Other projects would not have significant visual impacts, and one project (‘Inimim) would have a directly beneficial impact. As discussed in this chapter, the Proposed Projects would not have any unmitigated significant impacts on visual resources, and in some cases, would implement measures intended to provide visual benefits. Given all this, under the Cumulative Condition, including the Proposed Projects, the cumulative impacts on visual resources would be significant, primarily due to construction of the ARC Spillway.

YRDP Cumulative Impact VIS-PP-1: Potential for significant cumulative visual resource impacts resulting from the YRDP.

As discussed above, under the Cumulative Condition, including the Proposed Projects and other past, present, and future projects, there would be a significant impact to visual resources. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the proposed YRDP would not have any significant unmitigated impacts to visual resources. The proposed YRDP includes construction activities with comparatively minor visual effects, measures that are intended to provide long-term benefits to visual resources, and routine operations and maintenance activities that would not significantly change the visual environment. Moreover, many of the construction, operations, and maintenance activities that would occur under the proposed YRDP will not be visible from public areas. For these reasons, overall, the proposed YRDP’s incremental contribution to the cumulative impact to visual resources would not be cumulatively considerable. Accordingly, the proposed YRDP would result in a **less than significant cumulative impact** to visual resources.

Narrows Cumulative Impact VIS-PP-1: Potential for significant cumulative visual resource impacts resulting from the Narrows Project.

As discussed above, under the Cumulative Condition, including the Proposed Projects and other past, present, and future projects, there would be a significant impact to visual resources. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Proposed Narrows Project would not result in any notable visual changes relative to the Existing Condition, and many of Proposed Narrows Project operations will not be visible from public areas. As a result, the Proposed Narrows Project would not adversely impact visual resources, and the Proposed Narrows Project's incremental contribution to the cumulative impact to visual resources would not be cumulatively considerable. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** to visual resources.

12.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on visual resources are listed in Section 12.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 12.6.1 above. Alternative 1 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include some differences in flow-based operations, those differences are fairly minor (as explained in the project-level analysis above) and would not be substantial enough to alter the analysis and conclusions of the analysis in Section 12.6.1. For the same reasons explained in Section 12.6.1 above, under the Cumulative Condition, including Alternative 1, the cumulative impacts on visual resources would be significant, primarily due to construction of the ARC Spillway.

YRDP Cumulative Impact VIS-Alt1-1: Potential for significant cumulative visual resource impacts resulting from the YRDP.

As discussed above, under the Cumulative Condition, including Alternative 1 and other past, present, and future projects, there would be a significant impact to visual resources. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, YRDP activities under Alternative 1 would not have any significant unmitigated impacts to visual resources. YRDP activities under Alternative 1 include construction activities with comparatively minor visual effects, measures that are intended to provide long-term benefits to visual resources, and routine operations and maintenance activities that would not significantly change the visual environment. Hydrological changes from YRDP operations under Alternative 1 would not substantially alter visual resources. Moreover, many of the YRDP construction, operations, and maintenance activities that would occur under Alternative 1 will not be visible from public areas. For these reasons, overall, the incremental contribution to the cumulative impact to visual resources from YRDP activities under Alternative 1 would not be cumulatively considerable. Accordingly, YRDP activities under Alternative 1 would result in a **less than significant cumulative impact** to visual resources.

Narrows Cumulative Impact VIS-Alt1-1: Potential for significant cumulative visual resource impacts resulting from the Narrows Project.

As discussed above, under the Cumulative Condition, including Alternative 1 and other past, present, and future projects, there would be a significant impact to visual resources. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Narrows Project operations under Alternative 1 would not result in any notable visual changes relative to the Existing Condition, and many Narrows Project operations under Alternative 1 will not be visible from public areas. As a result, Narrows Project operations under Alternative 1 would not adversely impact visual resources, and the incremental contribution to the cumulative impact to visual resources from Narrows Project operations under Alternative 1 would not be cumulatively considerable. Accordingly, Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** to visual resources.

12.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on public services are listed in Section 12.6.1above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 12.6.1 above. Alternative 2 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include some differences in flow-based operations, those differences are fairly minor (as explained in the project-level analysis above) and would not be substantial enough to alter the analysis and conclusions of the analysis in Section 12.6.1. For the same reasons explained in Section 12.6.1 above, under the Cumulative Condition, including Alternative 2, the cumulative impacts on visual resources would be significant, primarily due to construction of the ARC Spillway.

YRDP Cumulative Impact VIS-Alt2-1: Potential for significant cumulative visual resource impacts resulting from the YRDP.

As discussed above, under the Cumulative Condition, including Alternative 2 and other past, present, and future projects, there would be a significant impact to visual resources. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, YRDP activities under Alternative 2 would not have any significant unmitigated impacts to visual resources. YRDP activities under Alternative 2 include construction activities with comparatively minor visual effects, measures that are intended to provide long-term benefits to visual resources, and routine operations and maintenance activities that would not significantly change the visual environment. Hydrological changes from YRDP operations under Alternative 2 would result in some visual changes (e.g., a more pronounced reservoir “bathtub ring” effect, but these would not constitute substantial and adverse effects to visual resources. Moreover, many of the YRDP construction, operations, and maintenance activities that would occur under the Alternative 1 will not be visible from public areas. For these reasons, overall, the incremental contribution to the cumulative impact to visual resources from

YRDP activities under Alternative 2 would not be cumulatively considerable. Accordingly, YRDP activities under Alternative 2 would result in a **less than significant cumulative impact** to visual resources.

Narrows Cumulative Impact VIS-Alt2-1: Potential for significant cumulative visual resource impacts resulting from the Narrows Project.

As discussed above, under the Cumulative Condition, including Alternative 2 and other past, present, and future projects, there would be a significant impact to visual resources. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Narrows Project operations under Alternative 2 would not result in any notable visual changes relative to the Existing Condition, and many Narrows Project operations under Alternative 2 will not be visible from public areas. As a result, Narrows Project operations under Alternative 2 would not adversely impact visual resources, and the incremental contribution to the cumulative impact to visual resources from Narrows Project operations under Alternative 2 would not be cumulatively considerable. Accordingly, Narrows Project operations under Alternative 2 would result in a **less than significant cumulative impact** to visual resources.

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CHAPTER 13

CULTURAL RESOURCES

13.1 Introduction

This chapter describes the environmental setting and regulatory framework for cultural resources and identifies direct and indirect impacts of the Proposed Projects during construction and O&M. For the purpose of this chapter, cultural resources include historic properties, as defined by the Advisory Council for Historic Preservation (ACHP) regulations (36 C.F.R. Part 800), and/or historic resources, as defined by the California Public Resources Code (PRC; § 5020.1[j]). For this chapter, historic properties and historic resources are interchangeable.

13.2 Environmental Setting

The following section describes the natural and cultural setting of the Project Area, including an archaeological precontact overview, a brief introduction to ethnographic and ethnohistoric context, and historic context.

13.2.1 Natural Setting

An overview of the natural setting of the Project Area is provided here to situate past, current, and future cultural research findings in the context of the environment.

13.2.1.1 Areas Upstream of Englebright Dam

The annual climatic cycle of the Project Area is typified by warm, dry summers and cold, wet winters. During the summer, heated valley air rises eastward across the Sierra Nevada, creating windy afternoon conditions (Schoenherr 1992:72). Annual temperatures vary with latitude and elevation, becoming colder at upper elevations. Substantial snowfall can occur at high elevations, generally in areas more than 4,000 to 5,000 feet at sea level (asl), which occurs in the North, South, and Middle Yuba River watersheds. The snowline extends down to approximately 3,000 feet asl. At Camptonville, near the Project Area, average annual temperatures range from mid-80 degrees Fahrenheit for the high and mid-30 degrees Fahrenheit for the low.

The local soil is heavily influenced by the underlying bedrock and includes alfisols, andisols, entisols, inceptisols, mollisols, and ultisols, in combination with mesic or frigid soil temperature regimes and zeric, udic, aridic, or aquic soil moisture regimes (Nevada Irrigation District [NID] 2008:7.1.6). Frigid soils are found in the upper elevations (above 5,000 feet) and are derived from granitic, glacial-alluvial, metasedimentary, or volcanic origin (andesitic tuffs and midflows).

The northwestern Sierra Nevada is traversed by numerous drainages that carry more than half the annual runoff in California (approximately 3.5 billion cubic meters of water) (Moratto 2004:13). The Project vicinity is drained by the Yuba River basin. The modern Yuba River began incising foothill channels five million years ago (Curtis et al. 2005).

Throughout the Sierra Nevada, plant distribution is principally determined by elevation, with vegetative communities progressing from grasslands at the lower levels, to pine and fir forests in the upper reaches. These communities run lengthwise across the western Sierra in a north–south direction, perpendicular to major precontact cultural boundaries (Moratto 2004:286). Prehistoric cultural boundaries typically trended west to east, encompassing all environments from the foothills to the Sierra Nevada crest therein providing each group access to the varied biotic resources of the area.

The Douglas-fir-pine forest, mixed conifer-pine forest, and ponderosa pine forest vegetative communities support a variety of birds and mammals. While the lower montane mixed chaparral vegetative community also supports many of these same animals, it also provides good lower-elevation habitat for different species. Several fish species have long been common to the major waterways in the Sierra Nevada.

13.2.1.2 Lower Yuba River

The Project Area lies within the eastern portion of Central Valley (Great Valley) physiographic province and the Seirra Nevada physiographic province (described above). This extensive valley is mostly flat, and elevations are near sea level. The Sacramento River and its tributaries drain the northern part of the valley (the Sacramento Valley) into the Sacramento-San Joaquin Delta. The Project Area is within the Sacramento/Feather Riverine Alluvium ecoregion, bound by the Northern Terraces ecoregion to the north and south and the Sierra Nevada Foothills ecoregion to the east (Griffith et al. 2016).

The Sacramento/Feather Riverine Alluvium ecoregion consists of nearly level floodplains and levees associated with the Sacramento, Feather, and lower Yuba and Bear rivers. Much of the unweathered gravel, sand, and silt deposits are in contact with present-day river systems and have constantly changing morphology. Flows of the major rivers are artificially controlled and confined by built levees. Entisols, mollisols, and alfisols are common. The xeric soils are moderately well to somewhat poorly drained and support pasture, wheat, fruit and nut orchards, and woody wetlands. Cottonwoods and mixed willows are present, along with some grasslands. Affected in places by historical mining practices in the Sierra Nevada, the riverine region includes areas of gold field tailings on the Yuba and Feather rivers (Griffith et al. 2016).

Sedimentation in the Central Valley is dominated by cycles of erosion from the high mountains, producing granitic parent material deposited on the floor of the valley below, forming vast alluvial fans and piedmont landforms. Local hydrology moves granitic sediments throughout the valley and deposits these sediments into existing basins. During periods of high effective moisture, rivers overflow and deposit fine-grained and often organic-rich sediments across the valley floodplain. The accumulation of these fine organic sediments along with periods of stability over millennia has resulted in a region with nutrient rich soils, making the Central Valley a prime landscape for agricultural practices. Surficial geology is comprised of Quaternary alluvium and tailings while the underlying geology is Pliocene interbedded alluvial gravel, sand and silt of the Laguna Formation, Upper Princton Valley Fill comprised of Miocene sandstone and nonmarine sediments, and pre-Cretaceous metamorphic and igneous rock (California Geological Survey 2010).

The lower Yuba River (downstream from Englebright Dam) is approximately 25 miles long, with about 16 miles of spawning habitat suitable for Chinook salmon. The upstream section of the lower Yuba River is confined by narrow bedrock cliffs and has minimal gravel input. Downstream, the river has a cobble/boulder substrate, much of which derives from historic and active mining. The mix of deep pools and riffle and run habitat provides healthy habitat conditions for salmonids. The channel is confined by cobble training walls. Daguerre Point Dam, approximately 11 miles upstream from the confluence with the Feather River, is a sediment retention dam that acts as a barrier for sturgeon and other fish that cannot pass over the fish ladders, including salmon under certain flow conditions. The meanders of the lower Yuba River are interspersed with gravel islands in the channel. It also changes its path after high-flow events. Flow requirements have been set for the Yuba River to ensure suitable conditions for Chinook salmon, steelhead, and American shad (Department of Water Resources 2012). Today, the lower Yuba River sustains one of the few remaining natural and non-hatchery populations of Chinook salmon and steelhead in the Central Valley.

Based on Köppen climate classification, the Project Area is characterized as a hot-summer Mediterranean climate characterized by hot, dry summers and cool, relatively wet winters (Kottek et al. 2006). Climate data were sourced from the Parameter-elevation Regressions on Independent Slopes Model (PRISM) Climate Group database (PRISM Climate Group, Oregon State University, https://prism.oregonstate.edu), accessed on November 5, 2024. The 30-year annual normals from 1991–2020 report highest precipitation between the months of November to April from rain. The mean annual temperature is 62.1 degrees Fahrenheit, the minimum temperature is 49.5 degrees Fahrenheit, and maximum temperature of 74.7 degrees Fahrenheit, with the warmest months from June through September. Mean annual rainfall for the region is 25.91 inches.

Several riparian communities are present within the floodplains of the Central Valley and foothills: scrub, woodland, and forest communities. Riparian habitats in the Central Valley and foothills support diverse wildlife, including sensitive invertebrates, amphibians, reptiles, birds, and mammals. Within the valley foothill riparian habitat, there is a wide variety of forest, woodland, and scrub communities dominated by broadleaved, deciduous trees and shrubs. The valley foothill riparian type is characterized by a dense, multilayered forest with a tree canopy dominated by any combination of cottonwood, sycamore, and valley oak; a subcanopy of shorter, shade-tolerant tree species such as box elder and Oregon ash; and an understory of shrubs such as willow, wild rose, and buttonbush (Department of Water Resources 2012).

Within the Project Area, the aquatic habitat includes both riverine and lacustrine communities. Riverine communities are in sloped stream channels with intermittent or continually flowing water. Lacustrine habitats are in inland depressions or dammed river channels containing standing water. Submerged aquatic vegetation may be sparse to dense in shallower depths less than 10 feet (Department of Water Resources 2012).

13.2.2 Cultural Setting

The subsequent ethnographic and ethnohistoric description also discusses the Project Area at large as it is a component within larger Nisenan familial and ancestral land/waterscapes; and directs readers to Chapter 14 for more information regarding Tribal connections and context. Subsequent

discussion of historic-era context is provided for each focus area (i.e., areas upstream of Englebright Dam and the lower Yuba River).

13.2.2.1 Precontact Archaeological Context

Current evidence suggests that the earliest human use of the Sierra Nevada and its foothills occurred during the late Pleistocene and early Holocene (13,500–10,500 years ago). This use consisted of sporadic seasonal visits by pre-Archaic people whose major settlements focused on lush lakeshore and streamside environments found in the western San Joaquin Valley and around the pluvial lakes of the Great Basin. The Witt Site, located along the former shoreline of Tulare Lake, produced numerous crescents, fluted points, stemmed points, and scrapers (Riddell and Olsen 1969). Discoveries of other early projectile points in the high Sierra Nevada support the notion that Paleoindian hunters periodically visited the upper slopes of the Sierra Nevada and might have settled at favored locations in the lower foothills.

The transition between the Pleistocene and Holocene occurred 10,000 years ago during a climatic warming period that peaked 9,000 years ago. The Holocene represents the latest interglacial event, marked by the retreat of Pleistocene glaciers (West et al. 2007:15–17). Complete glacial retreat likely occurred in the Sierra Nevada 12,000–13,000 years ago, leading to increased aridity and lower lake levels. Climatic conditions led to a change in the vegetative composition of the area, with incense cedar and oak species dominating the forests previously composed of pines (West et al. 2007:27).

By the Early Holocene, evidence from numerous archaeological sites throughout the state show that California was fully explored by this time and supported a significant population. The regional climate was distinguished by a steady warming and drying trend, or a period of "relative warming" (c.f. Lindström et al. 2007). In the Truckee area, the Alder Hill basalt quarry was actively used to procure tool stone. McGuire et al. (2006) recovered Great Basin stemmed points, datable carbon and obsidian that indicate the Alder Hill Quarry was being visited by the Early Holocene for the procurement of tool stone. The Middle Holocene is poorly represented archaeologically throughout California. Lindstrom et al. (2007:8) remark on this issue, speculating that several factors may obscure middle Holocene contexts. Warming conditions arising during the early Holocene evidently continued into the mid-Holocene. In the Tahoe region, Lindstrom et al. (2007:7) cite an extensive list of studies, all of which have concluded that the mid-Holocene was the warmest period in recent geological history and, at least in North America, one of the driest periods. Levels in Lake Tahoe may at times have fallen sufficiently low to isolate the lake from the Truckee River. Lindstrom et al. (2007) note evidence of a drought period, estimated to have lasted approximately 350 years, occurring between about 6300 and 4850 B.P. Effects of these changes west of the Tahoe region are not well documented.

The beginning of the Late Holocene is marked by climatic shifts toward a more temperate regime and is associated with the first well documented archaeological cultures in central and northern California. In the Sacramento-San Joaquin Delta region, the Windmiller culture emerged with unique traits, including an unusual mortuary pattern marked by prone interments with crania oriented in a westerly direction (Moratto 2004:201–207). As noted previously, in the Truckee vicinity and portions of the neighboring western High Sierra, the Martis Complex-marked by

typological affiliations with the Great Basin and a preference for locally abundant basalt-was identified by Heizer and Elsasser (1953), and Elsasser (1960).

With the Late Archaic, in the High Sierra, the Martis Complex gives way to the Kings Beach Complex, and in California, analogous changes occur as the Middle Horizon is replaced by the early Augustine Pattern. In California, important subsistence changes take place, with the acorn becoming an important staple; a process marked by abundant use of bedrock mortars. The bow appears as the preeminent weapon, marked archaeologically by an abrupt reduction in projectile point size and a significant increase in numbers of points. In the High Sierra, the bow also appears in the Kings Beach Complex, and preferred materials for weapon tips change from basalt to microcrystalline silicate materials, typically taking the form of Rose Spring and Gunther Barbed arrow points (Elston et al. 1977; Kowta 1988; McGuire et al. 2007:174; Moratto 2004:302–303).

During this period, transregional exchange networks were reestablished with clamshell disk beads, nonlocal obsidian, and other exotic artifacts, indicating that local populations participated fully in the statewide economic systems. Vessels and ornaments were manufactured from local steatite, and these also entered the regional exchange system. Pictographs and brownware pottery are also found at some Sierra Nevada sites dating from this period.

During the late eighteenth century, European immigrants brought elements of their own culture to California as indicated by glass, metal, and ceramic artifacts often found in contact-period sites. However, European immigrants also brought waves of devastating change that rapidly swept through native Californian populations, particularly the epidemic of 1833, which left many foothill villages deserted (Moratto 1984:338).

13.2.2.2 Ethnography and Ethnohistory

The Project Area is within the lands, airs, and waters of Nisenan familial and ancestral land/waterscapes (Levy 1978; Littlejohn 1928; Wilson and Towne 1978). The Nisenan homelands comprise lands and waters of the northern Sierra Nevada and Sacramento Valley and the many river drainages within, including the Yuba River watershed. The modern cities of Auburn, Folsom, and Nevada City and parts of the modern counties of El Dorado, Nevada, Placer, Sacramento, and Yuba are enveloped by Nisenan homelands and waters. Chapter 14, Tribal Cultural Resources, discusses the Nisenan in more detail, including potential Tribal Cultural Resources (TCRs) associated with the Nisenan.

13.2.2.3 Historic Context–Areas Upstream of Englebright Dam

Although early Spanish explorers initiated contact with coastal indigenous populations during the mid-sixteenth century, it was not until the arrival of Spanish missionaries in 1769 and the establishment of Spanish missions in the early nineteenth century that changes to native lifeways became fully apparent. In 1808, Gabriel Moraga identified numerous Nisenan villages along the Cosumnes, American, and Feather rivers during explorations for potential mission sites. Fray Narcisco Duran also reported many villages along the Sacramento River in 1817. The missionaries' colonizing efforts greatly affected the demography, social life, and culture of the indigenous people, and some Nisenan were likely forced into the Spanish mission system. During the early nineteenth century, European trappers, explorers, and other travelers also encountered

the Nisenan living within their traditional territories. However, by the middle of the nineteenth century, introduced diseases such as smallpox and malaria are estimated to have decimated as much as 75 percent of the Valley Nisenan population.

The discovery of gold at Sutter's Mill in 1848 initiated widespread Euro-American migration into the region. Food, shelter, and infrastructure were needed to support the thousands of miners who traveled to the area, and violent clashes between miners and indigenous populations were common. By the end of 1849, many of the drainages and streams that the Nisenan relied on for subsistence were polluted, and hunting and gathering lands were no longer accessible to them. As a result, many Nisenan were forced to abandon their traditional lifeways and seek work in other pursuits such as logging, ranching, and agricultural industries.

The initiation of the gold boom resulted in the establishment of an extensive network of roads, ferries, and other transportation systems in the northern Sierra Nevada. Mule trains carried supplies and passengers from Marysville to remote mining regions. As early as 1850, a series of bridges was constructed at Bullards Bar, most of which were washed away during winter storms. A toll bridge was built in 1875 and remained in place until the original Bullards Bar Dam and associated bridge were constructed in 1924. Following the decline of the gold mining boom in the 1850s, settlers turned to other economic endeavors. By the 1860s, logging, ranching, and some crop production were the primary pursuits in the Project Vicinity, with a number of ranches located in the area currently inundated by the New Bullards Bar Reservoir.

In September 1897, Eugene J. de Sabla, Jr., John Martin, and R.R. Colgate incorporated the Yuba Power Company for the primary purpose of constructing a power plant on the Yuba River. By April 1898, the plant was in operation with two generators that provided electricity to mines and agricultural fields in the Smartsville area. A ditch system diverted water from the North Fork of the Yuba River to Browns Valley. In 1899, the Yuba Power Company was reorganized as the Yuba Electric Power Company, and a new power plant was constructed that same year farther upstream from the Yuba plant. The new plant was called the Colgate Powerhouse after Romulus Riggs Colgate, and it included approximately 10 miles of wooden flumes, trestles, and pipes that carried water from the Browns Valley Irrigation District to the powerhouse. Additional water was transported to the powerhouse via a wood stave pipe flume from Lake Francis, a reservoir on nearby Dobbins Creek. In 1946, the Colgate Powerhouse was shut down after it suffered major fire damage. In 1949, the plant was reconstructed at a location 600 ft downstream from the original plant. The new, larger plant transported power to Sacramento via a 61-mile-long transmission line. From here, it joined a network of other transmission lines that ultimately supplied power to Oakland and San Francisco.

Construction of the Old Bullards Bar Dam began in 1922 and was completed in 1924. The dam was originally constructed for local hydraulic mining interests. The dam replaced a 40-foot-high earthen dam and included a powerhouse with a 6,000-horsepower capacity. PG&E purchased the dam and powerhouse in 1928. The site of this dam is currently inundated by the New Bullards Bar Dam.

In 1957, the Yuba County Council approved the construction of a new dam at Bullards Bar to meet county flood control and water storage needs, and on June 1, 1959, the Yuba County Water Agency (Yuba Water) was established. In 1961, Yuba County voters approved bonds that would provide

funding for the YRDP, which would replace the older Colgate facilities. The New Bullards Bar Dam was designed in 1965, and in 1966, Yuba Water and PG&E reached a funding agreement to construct the new facility. By 1969, construction of the New Bullards Bar Dam was completed. The New Colgate Powerhouse, constructed the following year, included two 18-foot-diameter Pelton water wheels.

13.2.2.4 Historic Context–Lower Yuba River

Prior to 1848 and the discovery of gold in California, the central Sierra Nevada remained largely unpopulated and unexplored by Euro-Americans. Beginning in 1769, the Spanish settled along the California coast and established a chain of 21 missions between San Diego and Sonoma; however, they rarely ventured into the interior, east of the coastline. The San Joaquin Valley was first explored by Spanish priests searching for new mission sites. As early as 1804, the expedition of Father Juan Martin ventured east to Tulare Lake, although no missions were established (Beck and Haase 1974:20). In 1806, Alferez Gabriel Moraga led the first expedition into the heart of the Central Valley, seeking suitable mission sites, and in 1808 Moraga undertook a second expedition, which is thought to have explored present-day Madera County (INFOTEC Research and Theodoratus Cultural Research 1985:72).

Expanding Euro-American colonization of the west led to the exploration of the Sierra Nevada Mountains. In 1826, fur trapper Jedediah Smith and his band of 15 mountain men trekked from the south end of the valley through the Tehachapi Mountains. From there, the group proceeded northward along the east side of the San Joaquin River and explored as far as the American River in the Sacramento Valley (INFOTEC Research and Theodoratus Cultural Research 1985:72–73). Subsequent American explorations in this region include the expeditions of Ewing Young in 1832–1833 and Joseph Walker in 1833. Members of the Walker expedition crossed the Sierra Nevada Mountains just north of Tuolumne Meadows and became the first European Americans to view the Yosemite Valley (Smith 1983:89). The trails blazed by these trappers and explorers allowed the growing number of American migrants to access to San Joaquin Valley and the Sierra Nevada mountains (INFOTEC Research and Theodoratus Cultural Research 1985:73).

Though Yuba County was officially established in 1850 as one of the original 27 counties in the State of California, non-indigenous people have been leading expeditions on and occupying the land since the early 1800s (Hoover et al. 1990; Lewis Publishing Company 1891:283). One potential origin of the name "Yuba" comes from a corruption of the Spanish word "uvas," meaning grape, as Moraga originally called the Yuba River "Río de las Uvas" (River of the Grapes) for the wild grapes along its banks (Hoover et al. 1990; Lewis Publishing Company 1891:186, 282) however the Maidu name of *Yu'-bah* is documented ethnographically as a place of dwelling, movement, pause, and return at the lands and waters of the confluence of the present day Yuba and Feather Rivers (Heizer and Hester 1970:88; Kroeber 1929:257; 1932:267-268; Powers 1877:282). Yuba County served as a thoroughfare, with trappers from the Hudson's Bay Company utilizing the region during the 1830s and early 1840s (Hoover et al. 1990). Also in the 1840s, a branch of the California Emigrant Trail passed through south Yuba County. In 1841, a large portion of what is now Yuba County was the property of John Sutter, which extended into present day Sutter and Placer counties. However, this land mass was larger than the Mexican government allowed any one person to own, so Sutter began selling portions of his land to other settlers. In 1842, Theodore Cordua built a ranch that would later become the city of Marysville. This ranch

was along the California-Oregon trail, and Cordua eventually transformed the ranch into a way station and trading post.

The California gold rush began in 1848 following the discovery of gold at Sutter's Mill and created a flood of immigrants to the fledgling state. Miners descended on gold fields as far north as Yreka and as far south as Mariposa (INFOTEC Research and Theodoratus Cultural Research 1985:73). The streams flowing into the Sacramento River from the northern Sierra attracted hundreds of gold seekers. By the end of that year four-fifths of California's able-bodied men were mining in the gold fields (Robinson 1948). Marysville eventually grew to be a head of navigation and center of trade for the mines along the Feather River during the California gold rush and was eventually named the county seat (Hoover et al. 1990). Many mining camps were relatively close to Marysville, so cargo brought via riverboat could easily be transported to gold fields using pack-mule trains. Initially, placer gold could be extracted by individual miners or small groups using simple hand techniques. Within a few short years, however, the easily mined placer deposits had been depleted and more complex, mechanized methods came into use. Hydraulic techniques allowed the mining of lower grade placer deposits but required an elaborate water management and delivery system that could only be developed and maintained with a large capital investment beyond the means of most individual miners. The use of hydraulic mining caused significant flooding and sediment deposits, raising the riverbed by more than 70 ft. Furthermore, the flow of sediment from hydraulic mining significantly changed the surrounding landscape and many homes and settlements were buried underneath debris (Marysville Appeal 1887). Large-scale hydraulic mining continued until 1884, when the "Sawyer Decision" of the federal courts (named for U.S. Circuit Court Judge L. B. Sawyer) put an end to the environmentally destructive practice (Wagner 1970:37).

Concurrently, agriculture and ranching had become predominant industries in Yuba County by the 1860s. The growth of these ventures led to the establishment of the first water districts and the development of irrigated agriculture in the county, which permitted the introduction of new crops. The railroad soon facilitated the expansion of agriculture by increasing access to markets at greater distances.

Today, the historic-age Browns Valley, Hallwood, and Cordua irrigation districts, as well as newer water districts such as Brophy, Dry Creek Mutual, Ramirez, and South Yuba, are partners of Yuba Water (YCWA 2024a). As noted, Yuba Water was created in 1959 by the California State Legislature to reduce flood risk and to provide a sustainable and reliable water supply in Yuba County. In 1961, the agency proposed the YRDP, a means to improve flood reduction and to enhance water supply through power generation. The YRDP was approved and licensed by 1966, with construction being completed in 1970 (YCWA 2024b). In more recent years, the agency created the Lower Yuba River Accord, which established more strenuous and protective instream flow requirements for salmon and steelhead trout to improve habitat conditions in the lower Yuba River. The Accord is a multi-agency agreement including a $565,000 annual commitment for scientific flow evaluations and fishery studies (YCWA 2024c).

13.2.2.5 Known Cultural Resources

In 2009, Yuba Water reviewed existing records housed at the North Central Information Center at California State University, Sacramento; the Northeast Information Center at California State

University, Chico; USACE offices in Sacramento; the PNF and TNF; and several libraries, historical societies, and museums. All relevant data on file at these repositories were examined, including cultural resource records, site location maps, General Land Office maps, other historic maps, NRHP listings, CRHR, Office of Historic Preservation Historic Property Directory, 1996 California State Historic Landmarks, 1976 California Inventory of Historic Resources, and the California Department of Transportation (CalTrans) Bridge Inventory. Additional archival research was conducted in 2011 and 2012 at the Yuba County Library California Reading Rooms in Marysville, the Doris Foley Library for Historical Research in Nevada City, the California State Library in Sacramento, the Center for Sacramento History in Sacramento, the Firehouse Museum in Nevada City, the Special Collections Room of the Meriam Library, the Camptonville Historical Society, and Yuba Water archives. At the request of the UAIC, researchers visited California State University, Sacramento in 2012 to verify the status of artifacts recovered during excavations around New Bullards Bar Dam in the 1960s that were being curated at the university.

The record searches indicate that 169 cultural resource investigations have previously been conducted within the Project Area and within a 0.25-mile buffer zone. Many of these surveys were conducted more than 10 years ago, and the resulting reports provide insufficient information to determine the adequacy of the coverage employed or the lack of other crucial data. However, these studies document 24 previously recorded cultural resources (archaeological sites and built-environment resources) within the Project Area.

Of the 24 previously recorded archaeological sites and/or built environment resources in the Project Area, 14 are precontact, 8 are historic, and 2 are multicomponent. The precontact components include milling stations, lithic scatters with and without tools, possible housepit depressions, and midden deposits. The historic components include foundations, historic campsites, refuse and can scatters, prospect features, historic roads and road segments, trails, structural remains, and ditches, while the multicomponent sites contain evidence of both precontact and historic occupation.

Following completion of the record searches, Yuba Water conducted archaeological and built environment field investigations within the Project Area between 2009 and 2011 (Ramsey Ford et al. 2014, 2016). An additional cultural resources study of proposed recreational improvements at the Cottage Creek and Dark Day boat launch facilities was submitted to the FERC in September 2017 (Ramsey Ford et al. 2018). A second report addressing the reconstruction of Cottage Creek Campground was filed on December 22, 2017 (Ruth et al. 2017). In 2020, a YRDP System evaluation survey, documenting and evaluating newly recorded historic built environment resources, was completed within the APE (Gratreak et al. 2020).

A cultural resources study of the Narrows 1 powerhouse and associated facilities, which had been recently acquired by Yuba Water, was completed in 2021 (Flint et al. 2021). Field investigations consisted of a combination of verifying data from the earlier surveys and systematically investigating locations within the Project Area that had been previously but inadequately surveyed and unsurveyed areas. These surveys did not include the land above the Narrows Project tunnels because operations do not affect lands on the surface at these locations. Because of the older age of most of the previous surveys and the limited amount of previous coverage, new surveys were completed regardless of prior coverage.

In general, the YRDP and Narrows Project Relicensing field surveys consisted of a team of archaeologists walking parallel transect intervals less than 15 meters apart. Areas considered to be sensitive for cultural resources (i.e., springs and drainages) were more closely inspected. Lands typically inundated by Bullards Bar Reservoir were surveyed as conditions allowed. Areas that could not be accessed in a safe manner (e.g., unsafe steep slopes and locations containing extremely dense vegetation) were not surveyed. However, boat inspections of steep, inaccessible areas around New Bullards Bar Reservoir were conducted using binoculars. This allowed for the identification of sites with large features in areas that were unsafe to survey on foot at that time.

From 2023 to 2024, additional reconnaissance-level field visits were conducted for 32 resources within the YRDP area to bring existing historic properties analysis to current standards, including background research, field survey/visits for resource identification/updates, coordination and correspondence with affiliated California Native American tribes and the United States Forest Service PNF and TNF (Dunnigan 2025).

The cumulative cultural resources studies from 2009 to 2024 identified 109 archaeological and built environment resources within the Project Area, of which 77 were previously determined or new evaluated as ineligible for inclusion in the NRHP and the CRHR during the studies, 35 remain unevaluated, and 2 have been evaluated as eligible (Table 13.2-1).

Table 13.2-1. Summary of Cultural Resources within the Project Area.

Resource Type	Ineligible	Unevaluated	Eligible	Total
Isolated Find	33	0	0	33
Archaeological Site	24	35	0	59
Built Environment Resource	14	0	2	16
Built Environment District	1	0	0	1
Total	72	35	2	109

13.2.2.5.1 Isolates

A total of 33 isolated finds are documented within the Project Area; 15 are precontact and 18 are historical. All 33 isolated finds have been evaluated as ineligible for inclusion in the NRHP and CRHR for contributions, or lack thereof, to archaeological information.

13.2.2.5.2 Archaeological Sites

A total of 59 archaeological sites were previously documented within the Project Area (Table 13.2-2). These 59 sites include 34 historical-era sites, 20 precontact sites, and 5 multicomponent sites that are comprised of both historic-era and precontact components. Of the archaeological sites identified within the Project Area, 24 were previously determined (i.e., with SHPO concurrence) or were newly evaluated during YRDP studies as ineligible for the NRHP and CRHR and 35 remain unevaluated with regards to their eligibility for inclusion on the NRHP and CRHR.

Table 13.2-2. Summary of Archaeological Resources within the Project Area.

Count	Site Number (Primary / Trinomial / Forest Service or Other No.)	Site Type	Brief Description	Individual NRHP / CRHR Eligibility
1	P-29-000250 CA-NEV-0192H	H	Eight concrete piers, a concrete wall, a concrete foundation, and a footpath	Ineligible
2	P-46-1849 CA-SIE-1849H FS 05-17-53-00340	H	Water Conveyance	Ineligible

Count	Site Number (Primary / Trinomial / Forest Service or Other No.)	Site Type	Brief Description	Individual NRHP / CRHR Eligibility
3	P-58-0036 CA-YUB-0018	P	BRM	Eligible
4	P-58-0037 CA-YUB-0019	P	BRM	Eligible
5	P-58-0038 CA-YUB-0020	P	House Pit	Eligible
6	P-58-0039 CA-YUB-0021	P	BRM	Eligible
7	P-58-0040 CA-YUB-0022	P	BRM	Eligible
8	P-58-0041 CA-YUB-0023	P	BRM	Eligible
9	P-58-0042 CA-YUB-0024	P	BRM	Eligible
10	P-58-0043 CA-YUB-0025/H	M	BRM; Habitation/Settlement	Unevaluated
11	P-58-0044 CA-YUB-0026/H	M	Lithic Scatter; Habitation/Settlement	Eligible
12	P-58-0886 CA-YUB-0868 FS 05-17-53-00126	P	BRM	Eligible
13	P-58-0905 CA-YUB-0887 FS 05-17-53-00127	P	BRM	Eligible
14	P-58-0912 CA-YUB-0894	P	BRM	Eligible
15	P-58-1072 CA-YUB-1054 FS 05-17-53-00072	P	Lithic Scatter	Eligible
59	P-58-1142 CA-YUB-1124H FS 05-17-53-00340	H	Mining; Habitation/Settlement	Ineligible
16	P-58-1918 CA-YUB-1574/H FS 05-11-53-00508	M	Mining, Habitation/Settlement, Milling Features	Eligible
17	P-58-2715 CA-YUB-1719H FS 05-11-53-00526	H	Transportation	Ineligible
18	P-58-2720-2720 CA-YUB-1721H FS 05-17-53-01006	H	Refuse Scatter	Ineligible
19	P-58-2721 CA-YUB-1722 FS 05-17-53-01001	P	BRM	Eligible
20	P-58-2724 CA-YUB-1725H FS 05-11-53-01087	H	Mining	Ineligible
21	P-58-2726 CA-YUB-1727 FS 05-17-53-01089	P	BRM	Unevaluated
22	P-58-2727 CA-YUB-1728 FS 05-17-53-01002	P	BRM	Eligible
23	P-58-2728 CA-YUB-1729 FS 05-17-53-01003	P	Projectile Points, Stone Tools, Flakes	Eligible
24	P-58-2729 CA-YUB-1730 FS 05-17-53-01004	P	Flakes, Stone Tools, Tool Fragments	Eligible

Count	Site Number (Primary / Trinomial / Forest Service or Other No.)	Site Type	Brief Description	Individual NRHP / CRHR Eligibility
25	P-58-2730 CA-YUB-1731 FS 05-17-53-01005	P	Scraper, Flakes, Fragments	Eligible
26	P-58-2731 CA-YUB-1732H FS 05-11-53-01090	H	Can Scatter	Ineligible
27	P-58-2732 FS 05-11-53-01091	H	Habitation/Settlement	Unevaluated
28	P-58-2734 CA-YUB-1734H	H	Refuse Scatter	Ineligible
29	P-58-2735 CA-YUB-1735H	H	Mining	Ineligible
30	P-58-2736 CA-YUB-1736H	H	Habitation/Settlement	Ineligible
31	P-58-2738 CA-YUN-1737H	H	Ditch	Unevaluated
32	P-58-2740 CA-YUB-1739 FS 05-17-53-01008	H	Road Segment	Ineligible
33	P-58-2741 CA-YUB-1740H FS 05-17-53-01009	H	Ditch	Ineligible
34	P-58-2742 CA-YUB-1741H FS 05-17-53-01010	H	Historic Road	Ineligible
35	P-58-2743 CA-YUB-1742H	H	Transportation/Refuse Scatter	Ineligible
36	P-58-2744 CA-YUB-1751H	H	Hydropower Construction	Ineligible
37	P-58-2745 CA-YUB-1750H	H	Other	Unevaluated
38	P-58-2747 CA-YUB-1748H	H	Hydropower Construction	Unevaluated
39	P-58-2750 CA-YUB-1746H	H	Metals, Cans	Ineligible
40	P-58-2752 CA-YUB-1752H FS 05-11-53-01093	H	Road Segment	Ineligible
41	P-58-2764 CA-YUB-1758H	H	Road Segment	Unevaluated
42	P-58-2765 CA-YUB-1759H	H	Trail	Ineligible
43	P-58-2766 CA-YUB-1760H	H	Recreation/Other	Ineligible
44	P-58-2767 CA-YUB-1761	P	Milling Feature	Eligible
45	P-58-2768 CA-YUB-1762H	H	Road Segment	Ineligible
46	P-58-2769 CA-YUB-1763	P	Fire-cracked Rock, Handstones, Chopper, Pestle	Eligible
47	P-58-2770 CA-YUB-1764/H	M	Milling Features/Lithic Scatter/Refuse Scatter	Eligible
48	P-58-2771 CA-YUB-1765H	H	Road Segment	Ineligible
49	P-58-2772 CA-YUB-1766H	H	Road Segment	Ineligible
50	P-58-2773 CA-YUB-1767	P	Flakes, Flake Tools, Handstones, Bottle Glass Base	Eligible

Count	Site Number (Primary / Trinomial / Forest Service or Other No.)	Site Type	Brief Description	Individual NRHP / CRHR Eligibility
51	P-58-2774 CA-YUB-1768H	H	Trail	Ineligible
52	P-58-2775 CA-YUB-1769H	H	Transportation	Ineligible
53	P-58-2776 CA-YUB-1770H	H	Transportation	Ineligible
54	P-58-2777 CA-YUB-1771H	H	Transportation	Ineligible
55	P-58-2898 CA-YUB-1833H	H	Road Segment	Ineligible
56	P-58-3061 CA-YUB-1921H	H	Habitation/Settlement	Ineligible
57	P-58-3062 CA-YUB-1922H	H	Transportation/Refuse Scatter	Ineligible
58	P-58-3063 CA-YUB-1923H	H	Transportation/Refuse Scatter	Ineligible

Note: BRM = Bedrock Milling Feature, CRHR = California Register of Historical Resources, No. = Number, NRHP = National Register of Historical Places. Site type: (H) Historical-era sites, (M) Multicomponent sites, (P) Precontact sites.

13.2.2.5.3 Built Environment Resources

A total of 17 built environment resources were identified and documented within the Project Area (Table 13.2-3). These resources include dam and irrigation system resources and hydroelectric resources. Of these 17 built environment resources, 15 are evaluated as ineligible for inclusion in the NRHP and 2 are evaluated as eligible for inclusion in the NRHP. These recommendations were made in the Ramsey Ford et. al. (2017) and Gratreak et al. (2020) technical Yuba Water reports, which were submitted to Yuba Water, FERC, and the SHPO. Properties listed in or eligible for listing in the NRHP are also eligible for listing in the CRHR and as such are considered historical resources for CEQA purposes. Therefore, the same 15 resources are recommended not eligible for inclusion in the CRHR and 2 as eligible for inclusion for corresponding criteria (e.g., A to 1, B to 2, etc.).

Table 13.2-3. Summary of Built Environment Resources within the Project Area.

Counts	Building/Structure (Primary No.)	NRHP Eligibility	CRHR Eligibility
1	Narrows 1 Powerhouse P-29-005103	Ineligible	Ineligible
2	Narrows 1 Tunnel P-29-005104	Ineligible	Ineligible
3	Narrows 1 Penstock P-29-005105	Ineligible	Ineligible
4	Narrows 1 Tramway and Hoist P-29-005106	Ineligible	Ineligible
5	Camptonville Diversion Tunnel P-58-2701	Ineligible	Ineligible
6	Log Cabin Diversion Dam P-58-2703	Ineligible	Ineligible
7	Lohman Ridge Diversion Tunnel P-58-2704	Ineligible	Ineligible
8	Narrows II Powerhouse P-58-2705	Ineligible	Ineligible
9	New Bullards Bar Dam P-58-2706	Ineligible	Ineligible

Counts	Building/Structure (Primary No.)	NRHP Eligibility	CRHR Eligibility
10	New Colgate Powerhouse P-58-2707	Eligible (C only)	Eligible (3 only)
11	New Bullards Bar Reservoir P-58-2708	Ineligible	Ineligible
12	New Colgate Powerhouse Penstock P-58-2709	Ineligible	Ineligible
13	Old Colgate Diversion Dam P-58-2710	Eligible (A and C)	Eligible (1 and 3)
14	Our House Diversion Dam P-58-2713	Ineligible	Ineligible
15	New Bullards Bar Dam Bypass Tunnel P-58-2714	Ineligible	Ineligible
16	Narrows 2 Penstock/Power Tunnel P-58-3308	Ineligible	Ineligible
17	Yuba River Development Project Historic Built Environment District P-29-5050/P-58-3309	Ineligible	Ineligible

Note: CRHR = California Register of Historical Resources, No. = Number, NRHP = National Register of Historical Places

Built Environment District

One Built Environment District, the Yuba River Development Project Historic Built Environment District (the District), has been identified within the Project Area. It comprises all the hydroelectric facilities within the YRDP area, with a total of 16 district elements identified. This District was evaluated and determined ineligible for inclusion in the NRHP and is accordingly recommended not eligible for the CRHR.

13.3 Regulatory Setting

The following regulations, plans, and policies provide relevant definitions and regulatory context for the impact discussion that follows. The Project Area is synonymous with the combined FERC project boundaries of the YRDP and Narrows Projects. The FERC project boundary for each project is also considered the respective Area of Potential Effects (APE). Within this APE there is regulatory overlap, as the Project Area falls under both Section 106 of the Federal NHPA and the state CEQA.

13.3.1 Federal Statutes

13.3.1.1 National Historic Preservation Act

Section 106 of the NHPA requires federal undertakings to consider the effects of the action on historic properties. Historic properties are defined by the ACHP regulations (36 C.F.R. Part 800) and consist of any pre-contact or historical archaeological site, building, structure, historic district, or object included in, or eligible for inclusion in the National Register of Historical Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria (36 C.F.R. Part 800.16[l]). In the context of Section 106 of the NHPA, an APE is defined as the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties.

To determine whether an undertaking could affect NRHP-eligible properties, cultural resources (including archaeological, historical, and architectural properties) must be inventoried and evaluated for listing in the NRHP.

For projects involving a lead federal agency, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. For a property to be considered for inclusion in the NRHP, it must be at least 50 years old and meet the criteria for evaluation set forth in 36 C.F.R. Part 60.4.

The quality of significance in American history, architecture, archaeology, engineering, and culture must be present in districts, sites, buildings, structures, and objects that possess integrity of design, setting, location, materials, workmanship, feeling, and association. They must also meet one or more of the four following criteria for inclusion on the NRHP.

- Association with events that have made a significant contribution to the broad patterns of history;
- Association with the lives of persons significant in the past;
- Embodiment of distinctive characteristics of a type, period, or method of construction, the work of a master, high artistic values, or a significant and distinguishable entity whose components may lack individual distinction; or
- History of yielding, or the potential to yield, information important in prehistory or history.

If a cultural resources professional meeting the Secretary of Interior's Qualification Standards determines a particular resource meets one of these criteria, it is considered as an eligible historic property for listing in the NRHP. Among other criteria considerations, a property that has achieved significance within the last 50 years is not considered eligible for inclusion in the NRHP unless certain exceptional conditions are met.

13.3.1.2 Native American Graves Protection and Repatriation Act of 1990 (PL 101-601; 25 U.S.C. 3001)

Under the Native American Graves Protection and Repatriation Act (NAGPRA) (25 United States Code [U.S.C.] 3001) and implementing regulations 43 C.F.R. Part 10, federal agencies are responsible for protecting Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on lands under the agency's jurisdiction. All human remains and potential human remains must be treated with respect and dignity at all times.

13.3.2 State Statutes and Regulations

13.3.2.1 Historical Resources

The term historical resource includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of Public Resources Code (PRC) (PRC § 5020.1[j]). The term "historic resource" is defined at CEQA Guidelines Section 15064.5 as:

(a) For purposes of this section, the term "historical resources" shall include the following:

(1) A resource listed in, or determined to be eligible by, the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code § 5024.1, Title 14 C.C.R., Section 14 C.C.R., Section 4850 et seq.).

(2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code, § 5024.1, Title 14 C.C.R., Section 14 C.C.R., Section 4852) including the following:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

(4) The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

Historical resources may be designated as such through three different processes:

- Official designation or recognition by a local government pursuant to local ordinance or resolution (PRC § 5020.1[k]);
- A local survey conducted pursuant to PRC § 5024.1(g); or
- The property is listed in or eligible for listing in the NRHP (PRC § 5024.1[d][1]).

The process for identifying historical resources is typically accomplished by applying the criteria for listing in the California Register of Historical Resources (CRHR), which states that a historical resource must be significant at the local, state, or national level under one or more of the following four criteria. It is associated with events that have made a significant contribution to the broad patterns of the following:

- California's history and cultural heritage;
- It is associated with the lives of persons important in our past;
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
- It has yielded, or may be likely to yield, information important in prehistory or history (C.C.R. 14 § 4852).

To be considered a historical resource for the purpose of CEQA, the resource must also have integrity, which is the authenticity of a resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Therefore, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is eligible for listing in the CRHR (C.C.R. 14 § 4852[c]). Additionally, properties listed in or eligible for listing in the NRHP are also eligible for listing in the CRHR and as such are considered historical resources for CEQA purposes.

Per CEQA Guidelines 15064.5(b), "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Following the process of determining significant impacts to archaeological and historical resources at CEQA Guidelines Section 15064.5(c), PRC Section 15126.4(b) provides guidance for considering and implementing appropriate mitigation measures: construction and/or O&M conducted in a manner consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Weeks and Grimmer 1995) reduces project impacts below a level of significance and thus project impacts would be considered not significant (PRC 15126.4(b)(1)); professional documentation (e.g., historic narrative, photographic documentation, architectural drawings, etc.) is not always sufficient mitigation to reduce impacts to a point of no effect on the environment (PRC 15126.4(b)(2)); and public agencies "should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature" (PRC 15126.4(b)(3)).

13.3.2.2 Unique Archeological Resources

The PRC also requires the lead agency to determine whether a project would have a significant effect on unique archaeological resources (PRC § 21083.2[a]).

The PRC defines a unique archaeological resource as follows:

- An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
    - Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
    - Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
    - Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2).

In most situations, resources that meet the definition of a unique archaeological resource also meet the definition of a historical resource. As a result, it is current professional practice to evaluate cultural resources for significance based on their eligibility for listing in the CRHR.

13.3.2.3 California Health and Safety Code Section 7050.5

Regarding the discovery of human remains on non-federal lands, § 7050.5 of the California Health and Safety Code (CHSC) states the following:

a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the PRC. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the PRC or to any person authorized to implement Section 5097.98 of the PRC.

b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the California Government Code (CGC), that the remains are not subject to the provisions of Section 27491 of the CGC or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in § 5097.98 of the PRC. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC) (CHSC Section 7050.5).

Of particular note to cultural resources is subsection (c). After notification, NAHC would follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants (MLD), if possible, and recommendations for treatment of the remains. The MLD would have 24 hours after notification by the NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under State law (PRC Section 5097.99).

13.3.2.4 California Graves Protection and Repatriation Act of 2001

Sections 8010 and 8011 of the CHSC also address the protection of Native American human remains and cultural items and state:

> 8010. This chapter shall be known, and may be cited as the California Native American Graves Protection and Repatriation Act (CalNAGPRA) of 2001.
>
> 8011. It is the intent of the Legislature to do all of the following:
>
> > (a) Provide a seamless and consistent state policy to ensure that all California Indian human remains and cultural items be treated with dignity and respect.
> >
> > (b) Apply the state's repatriation policy consistently with the provisions of the NAGPRA (25 U.S.C. Sec. 3001 et seq.), which was enacted in 1990.
> >
> > (c) Facilitate the implementation of the provisions of NAGPRA with respect to publicly funded agencies and museums in California.
> >
> > (d) Encourage voluntary disclosure and return of remains and cultural items by an agency or museum.
> >
> > (e) Provide a mechanism whereby lineal descendants and culturally affiliated California Indian tribes that file repatriation claims for human remains and cultural items under the NAGPRA (25 U.S.C. Sec. 3001 et seq.) or under this chapter with California state agencies and museums may request assistance from the commission in ensuring that state agencies and museums are responding to those claims in a timely manner and in facilitating the resolution of disputes regarding those claims.
> >
> > (f) Provide a mechanism whereby California tribes that are not federally recognized may file claims with agencies and museums for repatriation of human remains and cultural items.

Updates to the CalNAGPRA since its initial enactment include:

- Assembly Bill (AB) 275**:** CalNAGPRA provides expanded eligibility for tribes without federal recognition, and requires the University of California to create inventories and summaries of human remains and cultural items.
- AB 389: CalNAGPRA requires the California State University system to follow recommendations from the State Auditor as well as comply with NAGPRA and Cal NAGPRA in the repatriation of Ancestors and cultural items to California Native American Tribes.

13.3.3 Local Plans

13.3.3.1 Yuba County 2030 General Plan

Chapter 7 of the *Yuba County 2030 General Plan* details six policies (Policies NR6.1–NR6.6) aligning Yuba County's efforts to identify, protect, and preserve important prehistoric and historic resources with state and federal regulations (Yuba County 2011). Implementation of these policies is codified through Action NR6.1 (Environmental Review and Mitigation) that acknowledges that new development projects could have a significant adverse impact on the environment. Action NR6.1 details the Yuba County mandated steps to identify, avoid, and mitigate (if necessary) cultural resources. This process is consistent with the state and federal processes outlined above.

13.4 Impact Assessment Methodology

Analysis of Project-related impacts discussed in the subsequent section are guided by PRC 21084.1 and C.C.R. 15064.5(b) definitions of what constitutes substantial adverse change to the significance of an historical resource and that such adverse changes may constitute a significant effect on the environment. To determine whether Project-related impact(s) to a historical resource would occur, analysis is based upon review of previous cultural resource inventory work conducted in the Project area and consideration of the environmental context of the Project area, including consideration of cultural resource sensitivity of the Project area and proposed construction and operations.

13.4.1 Construction

Substantial adverse change in the significance of an historical resource includes "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings" (C.C.R. 15064.5(b)(1)). Various construction activities, detailed in Chapter 2, Project Description, of this document, are scheduled throughout the term of the YRDP relicensing and include the New Colgate Powerhouse New Tailwater Depression System (TDS), modifications to Our House Diversion Dam and Log Cabin Diversion Dam Fish Release Outlets, modifications to Lohman Ridge Diversion Tunnel Intake, Recreation Facilities, and Primary Project Roads and Trails and Recreation Roads. There would be no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

Construction projects would likely involve ground disturbance including excavation, vibration, and removal/replacement/upgrade of architectural resources (e.g., generation and non-generation facilities, recreational facilities, etc.) and vegetation (e.g., trees, stumps, shrubs). Construction of new infrastructure or modifications to existing infrastructure (e.g., equipment foundations, recreation facilities, etc.) could result in impacts on cultural resources. Ground-disturbing activities could result in significant impacts on cultural resources through their partial or complete destruction (C.C.R. 15064.5(b)(2)(A–C).

If construction activities for any of the projects included in the license were to result in either a direct impact (e.g., physical modification, damage, or destruction) or an indirect impact (e.g., alteration to setting, biological community, or visual setting) on any cultural resources as defined in CEQA Guidelines §15064.5, the impact would be potentially significant.

13.4.2 Operations

Proposed Projects operations not only include the operation and use of Proposed Projects facilities and recreation areas, but also the implementation of all proposed measures and the plans in the new license including changes in reservoir elevations, flows, and other O&M related activities. Yuba Water does not propose adding any previously constructed, unlicensed water-power structures to the Proposed Projects. The Proposed Projects do include significant updates to existing facilities that could result in impacts on existing precontact, historic, and built environment resources, and may include impacts made by the public during use of Proposed Project facilities, including vandalism and trampling. If operations activities included in the license were to result in either a direct impact (e.g., physical modification, damage, or destruction) or an indirect impact (e.g., alteration to setting, biological community, or visual setting) on any cultural resources as defined in CEQA Guidelines §15064.5, the impact would be potentially significant.

13.4.3 Impact Indicators and Significance Criteria

The impact indicators and significance criteria are outlined by CEQA Appendix G as defined in §15064.5. Under CEQA Guidelines Appendix G, a project may have a significant impact on cultural resources if it would:

- **Impact CULT-1:** Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.
- **Impact CULT-2:** Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.
- **Impact CULT-3:** Disturb any human remains, including those interred outside of dedicated cemeteries.

13.5 Environmental Impact Analysis

This section presents the potential environmental impacts of the Proposed Projects and alternatives. Impacts on cultural resources could result from ground-disturbing activities including Project-related excavation, grading, trenching, vegetation clearing, and operation of heavy

equipment that could damage or destroy buried or surficial precontact, historic, and/or built environment resources present within the Project Area.

13.5.1 Proposed Projects Compared to the Existing Condition

YRDP Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

Construction of the TDS at the existing New Colgate Powerhouse has the potential to impact a historical resource, the New Colgate Powerhouse. The powerhouse meets the significance criteria of NRHP Criterion C and CRHR Criterion 3 due to unique engineering using the Risdon 3,000 horsepower undershot Pelton-style water turbines, among the largest in the world. TDS construction has the potential to result in "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (C.C.R. 15064.5(b)(1)) and materially alter in an adverse manner physical characteristics that convey its historical significance (C.C.R. 15064.5(b)(2)(A)), resulting in a substantial adverse change to a historical resource.

Rehabilitation proposed at Garden Point Boat-in Campground has the potential to impact CA-YUB-22, a historical resource that is also a TCR (Dunnigan 2025), through ground disturbing activities that meet the definition of substantial adverse change (C.C.R. 15064.5(b)(1) and C.C.R. 15064.5(b)(2)(A)).

Project O&M is not anticipated to cause significant fluctuations in water levels and/or wave action that would increase erosion of site sediments on the shore of New Bullards Bar. Under the Existing Condition, Project O&M (recreational wave action) has contributed to erosion documented at five historical resources (CA-YUB-1728, CA-YUB-1761, CA-YUB-1763, CA-YUB-1764/H, and CA-YUB-1767) and vegetation management, facilities management, and recreational activities and potential looting at three of these same historical resources (CA-YUB-1728, CA-YUB-1761, and CA-YUB-1767) are potential direct impacts (Dunnigan 2025; Ramsey et al. 2016). The existing Project effects at these places meet the definition of substantial adverse change (C.C.R. 15064.5(b)(1) and C.C.R. 15064.5(b)(2)(A)) to a historical resource. Under the Proposed Project the YRDP required flow would result in lower lake levels and would thus reduce the exposure of these five historic resources to wave action and further erosion.

The Proposed YRDP Project includes a requirement that a Historic Properties Management Plan (HPMP) be implemented by Programmatic Agreement at the time of license issuance to ensure historic properties are protected over the license term. The purpose of the HPMP is to prescribe specific actions and processes to manage historic properties within the APE. It is intended to serve as a guide for Yuba Water operating personnel when performing necessary O&M activities and to prescribe site treatments designed to address ongoing and future effects to historic properties. The HPMP also describes a process of consultation with appropriate state and federal agencies and Native American tribes regarding historic properties within the APE. Resource-specific management measures of the HPMP are based on multiple factors that take into account resource locations relative to Project-related O&M activities, characteristics of each resource make it eligible for inclusion in the NRHP, and identified ongoing or potential Project-related impacts. Recorded cultural resources referenced in this chapter, while discussed in CEQA terminology of

archaeological and historical resources, are included in the HPMP as potential "historic properties" for compliance with Section 106 of the NHPA.

Resource-specific management measures in Section 5.1.2 of the 2016 draft HPMP for the YRDP would guide TDS construction to be conducted in a manner consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Weeks and Grimmer 1995) and reduce Project impacts below a level of significance, and thus Project impacts would not be considered significant for this resource (PRC 15126.4(b)(1)).

As part of the Proposed YRDP Project, Yuba Water is required to revise the 2016 draft HPMP for the YRDP to include (1) cultural resources information and consultation results developed after preparation of the 2016 draft HPMP; (2) updated determinations of NRHP eligibility of six cultural resources (CA-YUB-1751H, CA-YUB-1760H, CA-YUB-1762H, CA-YUB-1768H, CA-YUB-1770H, and CA-YUB-1736H) and the New Colgate Penstock; (3) clarification of the description of site CA-SIE-1849H (previously CA-YUB-1733H); and (4) the results of Yuba Water's final supplemental traditional cultural property (TCP) report. Implementing the HPMP after the relicensing, with these revisions, would address adverse changes that are occurring under the Existing Condition and ensure that historic properties are protected over the license term.

Existing resource management measures of the 2016 HPMP pre-date recent cultural resource and TCR (Dunnigan 2025; Ruth 2025) assessment and evaluation of six historical resources being impacted under the Existing Condition (CA-YUB-22, CA-YUB-1728, CA-YUB-1761, CA-YUB-1763, CA-YUB-1764/H, and CA-YUB-1767). The 2016 HPMP includes identification of these impacts, though resource-specific management measures for these six historical resources are outdated as they include NRHP evaluations and development of treatment plans if determined eligible for listing in the NRHP after license implementation. Appropriate management measures for these resources, and the updated CRHR/NRHP eligibility determinations, will be incorporated into the revised HPMP in coordination and consultation with the appropriate state and federal agencies and Native American tribes, and will include protective measures including environmentally sensitive area (ESA) fencing, cultural resource awareness training and cultural resource monitoring during campground rehabilitation (CA-YUB-22), periodic historical resource assessments, and public education efforts for protection of sensitive cultural resources (CA-YUB-1728, CA-YUB-1761, CA-YUB-1763, CA-YUB-1764/H, and CA-YUB-1767).

As explained above, with implementation of the revised HPMP, the Proposed YRDP Project will not result in new substantial adverse changes in the significance of a historical resource and will implement protective measures to address existing impacts to historical resources. Therefore, the Proposed YRDP Project would not result in a significant impact relative to the Existing Condition and, impacts to historical resources are **less than significant**.

YRDP Impact CULT-PP-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

Project O&M fluctuating water levels and/or wave action contributing to the surface erosion of site sediments under the Existing Condition is documented at two archaeological resources not yet evaluated for their eligibility for listing in the CRHR (P-58-2732 and CA-YUB-1727) (Dunnigan 2025; Ramsey et al. 2016). These resources are accessible only at periods of high water.

Additionally, CA-YUB-1727 is subject to recreation facility-related impacts of wave action, vegetation management, facilities management, and recreational activities and potential looting. All other archaeological resources within the Project area have either been determined to be historical resources (i.e., eligible for listing in the CRHR) or non-unique archaeological resources (i.e., not eligible for listing in the CRHR) through cultural resource inventory and resource assessments described above in Section 13.2.2.5. The Proposed YRDP Project is not anticipated to cause changes that would exacerbate the adverse impacts to these resources that are occurring under the Existing Condition.

Moreover, consistent with the *Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects* issued jointly by FERC and ACHP in 2002 and the USDOI Secretary's standards and guidelines (USDOI 1983, 1997) for managing historic properties within the Project's APE, current resource-specific management measures in Section 5.2.1 of the 2016 HPMP guide resource evaluations for these unevaluated resources to take place within 4 years of license issuance and approval of the HPMP and resolution measures for addressing effects within 3 years of a determination of adverse effect to a historic property (or significant impact to a historical resource or unique archaeological resource) as needed.

Accordingly, by updating the HPMP as described above to incorporate additional recent cultural resource inventory and resource evaluation information, and to revisit evaluation and potential treatment of these archaeological resources in consultation with appropriate state and federal agencies and Native American tribes, Yuba Water will ensure that the Proposed YRDP Project would not result in new substantial adverse changes to the significance of an archaeological resource and would implement protective measures to address existing impacts to archaeological resources. Therefore, impacts are **less than significant**.

YRDP Impact CULT-PP-3: Project Impacts That May Disturb any Human Remains

No evidence for human interments has been found within the Project area in cultural resource investigations to date. While it is unlikely the Proposed YRDP Project would disturb human remains, it is possible. If any human remains are unearthed during Project construction and recreation facility rehabilitation, a potentially significant disturbance of human remains would occur. In the event of inadvertent discovery of any human remains, mitigation **(MM CULT-1)** is proposed and includes stopping work in the immediate vicinity of the find until compliance with Section 15064.5(e)(1) and (2) of CEQA Guidelines and PRC 5097.97 have occurred, and processes outlined at CHSC 7050.5 are followed.

Mitigation Measure MM-CULT-1: Inadvertent Discovery of Human Remains

If human remains are uncovered during Project activities, Yuba Water shall immediately halt work, contact the appropriate County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code 5097.98 (as amended). The NAHC shall designate a Most Likely Descendant (MLD) for the remains per Public Resources Code Section 5097.98, and Yuba Water shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed

by further activity until Yuba Water has discussed and conferred with the MLD regarding their recommendation for the disposition of the remains, taking into account the possibility of multiple human remains as prescribed in Public Resources Code Section 5097.98.

With implementation of the identified mitigation measure, potential disturbance of human remains would be reduced to a **less than significant level with mitigation incorporated**.

Narrows Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

The 2021 archaeological and built environment study of the Narrows 1 powerhouse and associated facilities identified five historic-era cultural resources within the Narrows FERC Boundary (Flint et al. 2021). All five resources were evaluated and recommended not eligible for inclusion in the NRHP and as such are considered not eligible for inclusion in the CRHR. These five resources do not meet the definition of a historical resource (C.C.R. 15064.5(a)), and therefore there are **no impacts** that would cause a substantial adverse change in the significance of a historical resource.

Narrows Impact CULT-PP-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

The historic-era cultural resources identified in the Narrows Project Area are neither unique archaeological resources nor historical resources. Accordingly, there are **no impacts** on the environment (C.C.R. 15064.5(c)(4)).

Narrows Impact CULT-PP-3: Project Impacts That May Disturb any Human Remains

No evidence for human interments has been found within the Project Area in cultural resource investigations to date. While it is unlikely that Proposed Narrows Project operations would disturb human remains, it is possible. If any human remains are unearthed during Project O&M, a potentially significant disturbance of human remains would occur. In the event of inadvertent discovery of any human remains, mitigation **(MM CULT-1)** is proposed and includes stopping work in the immediate vicinity of the find until compliance with Section 15064.5(e)(1) and (2) of CEQA Guidelines and PRC 5097.97 have occurred and processes outlined at CHSC 7050.5 are followed. With implementation of the identified mitigation measure, potential disturbance of human remains would be reduced to a **less than significant level with mitigation incorporated**.

13.5.2 Alternative 1 Compared to the Existing Condition

YRDP Impact CULT-Alt1-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

Under Alternative 1, YRDP construction and ground-disturbing activities would be the same as those identified above for the Proposed Projects and would therefore have the same associated impacts described above for *YRDP Impact CULT-PP-1* (see Section 13.5.1).

With respect to flow-based YRDP operations, **Alternative 1 O&M** would be similar to the Proposed Projects but would include the reoperation of 15,600 acre-ft of additional flow from the YB/DS hydroelectric projects during Dry and Critically Dry years. Reoperation of additional flow is not anticipated to directly affect historical resources, as flows are intended to maintain

operational lake levels during Dry and Critically Dry years. Potential increased recreation and subsequent wave action and corresponding erosion would not substantially exacerbate impacts that are occurring under the Existing Condition. Therefore, Alternative 1 impacts to historical resource are considered **less than significant**.

YRDP Impact CULT-Alt1-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

Flow-based **Alternative 1 O&M** would be similar to the Proposed Projects but would include the reoperation of 15,600 acre-ft of additional flow from the YB/DS hydroelectric projects during Dry and Critically Dry years. Reoperation of additional flow is not anticipated to directly affect archaeological resources, as flows are intended to maintain operational lake levels during Dry and Critically Dry years. Thus, Alternative 1 impacts on archaeological resources would be similar to those under the Proposed Projects described above for *YRDP Impact CULT-PP-2* (see Section 13.5.1). Current resource-specific management measures in Section 5.2.1 of the 2016 HPMP would guide resource evaluations for the two unevaluated resources to take place within 4 years of license issuance and approval of the HPMP and resolution measures for addressing effects within 3 years of a determination of adverse effect to a historic property (or significant impact to a historical resource or unique archaeological resource) as needed. As such, under Alternative 1, impacts to archaeological resources would be **less than significant**.

YRDP Impact CULT-Alt1-3: Project Impacts That May Disturb any Human Remains

YRDP construction and non-flow operations under Alternative 1 would be the same as under the Proposed Projects and would therefore have the same impacts associated with inadvertent disturbance of human remains. For the same reasons described above for *YRDP Impact CULT-PP-3*, with implementation of MM-CULT-1, this impact would be **less than significant with mitigation incorporated**.

Narrows Impact CULT-Alt1-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

As noted above in Section 13.5.1, *Narrows Impact CULT-PP-1,* the five recorded historic-era cultural resources within the Narrows Project area do not meet the definition of a historical resource (C.C.R. 15064.5(a)), and therefore there are **no impacts** that would cause a substantial adverse change in the significance of a historical resource under Alternative 1.

Narrows Impact CULT-Alt1-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

The historic-era cultural resources identified in the Narrows Project area are neither unique archaeological resources nor historical resources. Accordingly, the effects of Alternative 1 on these resources are **less than significant** effects on the environment (C.C.R. 15064.5(c)(4).

Narrows Impact CULT-Alt1-3: Project Impacts That May Disturb any Human Remains

Non-flow Narrows Project operations under Alternative 1 would be the same as those under the Proposed Projects and would therefore have the same impacts associated with inadvertent discovery of human remains. For the same reasons described above for *Narrows Impact CULT-*

PP-3, with implementation of MM CUL-1, this impact would be **less than significant with mitigation incorporated**.

Indirect Impact CULT-Alt1-1: Indirect Impacts to Cultural Resources Upstream of YRDP from YB/DS Operations under Alternative 1

Alternative 1 includes a contribution of 15,600 acre-ft of water from the Yuba-Bear/Drum-Spaulding projects that would be provided in Dry and Critically Dry Years under new FERC licenses for those projects. The following discussion provides a programmatic analysis of the potential indirect impacts to cultural resources in areas upstream of the YRDP associated with this component of Alternative 1.

As explained in the Nevada Irrigation District Yuba-Bear Hydroelectric Project MND,[1] there are historical and archaeological resources present along the Middle and South Yuba River that could be impacted by the hydrological changes associated with the release of these additional flows before the water reaches YRDP facilities and reaches in Dry and Critically Dry Years; however, the exact nature and location of these resources is unknown.

YB/DS operations under Alternative 1 would be subject to their own project-specific HPMPs as part of their FERC relicensing, which include protections for cultural resources. Additionally, for purposes of this programmatic analysis, it is reasonably foreseeable that YB/DS operations under Alternative 1 would include available protective measures developed in collaboration with regulatory agencies to ensure that those operations would not cause substantial adverse changes in historical or archaeological resources or inadvertently disturb human remains upstream of the YRDP. Therefore, Alternative 1 indirect impacts from YB/DS operations on cultural resources upstream of the YRDP would be **less than significant**. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

13.5.3 Alternative 2 compared to the Existing Condition

This section presents the potential environmental impacts of the Proposed Project Alternative 2, an alternative representing implementation of the SWRCB Plan Update regulatory pathway in the Yuba River Watershed. The implementation of Alternative 2 would result in hydrological operational changes that could result in altered flows and water temperature conditions. All of the various nonflow-related components (e.g., proposed recreation facility improvements, proposed implementation plans, FERC conditions, USFS 4(e) conditions, etc.) of the Proposed Projects are incorporated as part of Alternative 2.

[1] The MND's discussion of cultural resources is incorporated by reference and is available online at https://www.nidwater.com/files/a21d4c3d3/NID+Yuba-Bear+Draft+CEQA+Supp.+Analysis+IS-MND+06162025.pdf.

YRDP Impact CULT-Alt2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

Under Alternative 2, YRDP construction and ground-disturbing activities would be the same as those identified above for the Proposed Projects and would therefore have the same associated impacts described above for *YRDP Impact CULT-PP-1* (see Section 13.5.1).

With respect to flow-based YRDP operations, Alternative 2 O&M would result in hydrological operational changes that could result in altered flows and water temperature conditions; however, these hydrological differences are not anticipated to have impacts to historical resources beyond that described in *YRDP Impact CULT-PP-1*. Accordingly, Alternative 2 impacts to historical resources would be **less than significant.**

YRDP Impact CULT-Alt2-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

Alternative 2 O&M includes the same modeled operational assumptions as the Proposed Project, with the only difference being flow related. These flows would occur below the New Bullards Bar Reservoir. Archaeological resources below the New Bullards Bar Reservoir are not subject to effects of fluctuating water due to their elevation above the Yuba River. While these resources are within the FERC boundary, they are situated well above the historic high-water line of the Yuba River. The hydrological differences are not anticipated to have impacts to archaeological resources beyond that described in *YRDP Impact CULT-PP-2*. Accordingly, Alternative 2 impacts to archaeological resources would be **less than significant.**

YRDP Impact CULT-Alt2-3: Project Impacts That May Disturb any Human Remains

YRDP construction and non-flow operations under Alternative 2 would be the same as under the Proposed Projects and would therefore have the same impacts associated with inadvertent disturbance of human remains. For the same reasons described above for *YRDP Impact CULT-PP-3*, with implementation of MM-CULT-1, this impact would be **less than significant with mitigation incorporated**.

Narrows Impact CULT-Alt2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

As described above for *Narrows Impact CULT-PP-1* and *Narrows Impact CULT-Alt1*, the five recorded historic-era cultural resources within the Narrows Project Area do not meet the definition of a historical resource (C.C.R. 15064.5(a)), therefore, there are **no impacts** that would cause a substantial adverse change in the significance of a historical resource under Alternative 2.

Narrows Impact CULT-Alt2-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

The historic-era cultural resources identified in the Narrows Project area are neither unique archaeological resources nor historical resources. Accordingly, the effects of Alternative 2 on these resources are **less than significant** effects on the environment (C.C.R. 15064.5(c)(4)).

Narrows Impact CULT-Alt2-3: Project Impacts That May Disturb any Human Remains

Non-flow Narrows Project operations under Alternative 2 would be the same as those under the Proposed Projects and would therefore have the same impacts associated with inadvertent discovery of human remains. For the same reasons described above for *Narrows Impact CULT-PP-3*, with implementation of MM CUL-1, this impact would be **less than significant with mitigation incorporated**.

13.5.4 No Project Alternative Compared to the Existing Condition

YRDP Impact CULT-NP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

Under the **No Project Alternative,** there would be no construction of new, expanded, or modified project facilities. Additionally, the No Project Alternative would not include the transfer, lease, or sale of property outside of federal or Yuba Water ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of these known cultural resources. Under the No Project Alternative, Yuba Water would not accept a new 50-year license from FERC to generate hydropower, but it would continue to operate the YRDP for water supply, flood control, and other purposes.

The No Project Alternative would not cause physical destruction or damage to any known historical resources through construction.

The No Project Alternative would result in reduced fluctuations of Yuba River inflows into Englebright Reservoir and Englebright Reservoir water surface elevations, relative to the Existing Condition. Recreational activities are anticipated to remain the same as the Existing Condition, and potential looting and recreational induced wave impacts are not expected to worsen compared to the current conditions. Under the No Project Alternative, there would be **no new impacts.**

YRDP Impact CULT-NP-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

The **No Project Alternative** does not include the construction of new, expanded, or modified facilities. Additionally, Project O&M activities would be minor hourly and intraday variations in releases from the Colgate Powerhouse into the Yuba River reach that flows into Englebright Reservoir and would not affect archaeological resources. Thus, there would be **no new impacts** to cultural resources**.**

YRDP Impact CULT-NP-3: Project Impacts That May Disturb any Human Remains

Under the No Project Alternative, there would be no construction or new O&M activities. Any disturbance to human remains under the No Project Alternative would be relative to the Existing Condition. Under the No Project Alternative there would be **no new impacts**.

Narrows Impact CULT-Alt2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource

As noted above in Section 13.5.1, *Narrows Impact CULT-PP-1,* the five recorded historic-era cultural resources within the Narrows Project area do not meet the definition of a historical

resource (C.C.R. 15064.5(a)), therefore there are **no impacts** that would cause a substantial adverse change in the significance of a historical resource under the **No Project Alternative.**

Narrows Impact CULT-NP-2: Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

The historic-era cultural resources identified in the Narrows Project area are neither unique archaeological resources nor historical resources. Accordingly, the **No Project Alternative** would have **no impact** (C.C.R. 15064.5(c)(4)).

Narrows Impact CULT-NP-3: Project Impacts That May Disturb any Human Remains

Under the No Project Alternative, there would be no construction or new O&M activities. Any disturbance to human remains under the No Project Alternative would be relative to the Existing Condition. Under the No Project Alternative there would be **no new impacts**.

13.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). Only those projects that could affect cultural resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to regional water supply operations, or water-related and water dependent resources that also could be affected by the Proposed Projects or alternatives (see Chapter 4). For this reason, only the limited numbers of projects with the potential to cumulatively impact cultural resources are specifically considered qualitatively in the cumulative impacts analysis for cultural resources:

- FERC Hydropower Projects in the Yuba River Watershed:
    - *Yuba-Bear Hydroelectric Project (Yuba-Bear Project) FERC Project No. 2266 Relicensing, Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310) and the Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing*
    - *Oroville Facilities Hydroelectric Project FERC Relicensing (FERC Project No. 2100)*
    - *South Feather Power Project FERC Relicensing (FERC Project No. 2088)*
- Water Storage and Conveyance Projects:
    - *Sites Reservoir Project*
    - *Delta Conveyance Project*
    - *ARC Spillway Project*

- *USACE NBB Dam and Reservoir Water Control Manual (WCM) Update*
- *WWD In-Lieu Recharge Project*
- *Healthy Rivers and Landscapes (HR&L) Program*

- Water Transfer and Acquisition Programs:
  - *Lower Yuba River Accord Water Transfer Program Extension*
  - *Long-term and Short-term Water Transfers*
  - *Cordua Groundwater Monitoring Well*
  - *WWD In-Lieu Recharge Project*
- Flood Control Projects:
  - *500-Year Flood Protection Project*
  - *Yuba River North Training Wall (NTW) Project*
- Ecosystem Restoration and Fisheries Improvement Projects:
  - *Yuba Foothills Healthy Forest Project*
  - *North Yuba Forest Partnership*
  - *Upper Yuba Headwaters Forest Restoration Project*
  - *`Inimim Forest Restoration Project*
  - *Yuba River Resilience Initiative*
  - *Hallowood Side Channel and Floodplain Restoration Project*
  - *Yuba River Canyon Salmon Habitat Restoration Project*
  - *Timbuctoo Acquisition and Restoration Project*
  - *Upper Long Bar Habitat Restoration Project*
  - *Lower Long Bar Restoration Project*
  - *Upper Rose Bar Habitat Restoration Project*
  - *Hallwood/Cordua Canal – Fish Screen Return Line Replacement*
  - *South Canal Diversion Water Supply and Fish Passage Enhancement Annual Maintenance Project*
- Other Local Projects in the Yuba Region:
  - *Yuba City Boat Ramp Sediment Removal Project*

These projects are described in Chapter 4 and qualitatively addressed below. Although impacts to cultural resources tend to be site-specific, cumulative impacts to these types of resources occur when the Proposed Project and/or cumulative projects substantially diminish the number of these resources within the same or similar context or property type. As described above, based on records search, background research, and field survey of cultural resources in the Project Study Area, the Project has a high sensitivity for cultural resources. Additionally, the cumulative effects of the

various projects described in Chapter 4 cover a wide geographic extent. The extent of potential cumulative impacts on cultural resources focuses on effects of the areas and projects along the North Fork of the Yuba River, New Bullards Bar Reservoir, and the Lower Yuba River.

13.6.1 Cumulative Condition with Proposed Projects Compared to the Existing Condition

Of the projects discussed above, all have the potential to affect future cultural resource conditions as these types of resources are limited and finite and may be impacted by ground disturbance, recreationist/public disturbances, and past, present, and future water flows. Plans and projects that include areas upstream of Englebright Dam include the USACE NBB Dam and Reservoir WCM Update. The ARC Spillway project has been subject to CEQA analysis in a separate EIR for which cumulative impacts of the ARC Spillway project were identified and determined to be less than cumulatively considerable with appropriate mitigation (Yuba Water 2023). The USACE NBB Dam and Reservoir WCM is subject to Section 106 and its implementing regulations that require consideration for impacts to historic properties, including preparation of avoidance, minimization, and mitigation measures to reduce adverse effects. As the USACE NBB Dam and Reservoir WCM overlap with the Project Area, and the ARC Spillway project will ultimately be part of the YRDP, it is expected that implementation of both projects will include avoidance, minimization, and mitigation plans to reduce direct and indirect adverse effects/impacts to less than significant where feasible.

All of the projects listed above have the potential to affect future cultural resource conditions by impacts of fluctuating water levels and/or wave action contributing to erosion of site sediments documented at five historical resources (CA-YUB-1728, CA-YUB-1761, CA-YUB-1763, CA-YUB-1764/H, and CA-YUB-1767), vegetation management, facilities management, and recreational activities and potential looting. In combination with impacts from cumulative projects, impacts from the Proposed Project to archaeological resources would not be elevated to a significant impact following revision to the 2016 HPMP and implementation of the revised HPMP.

As explained above, the Proposed Projects would not result in any unmitigated significant impacts related to historical resources, archaeological resources, or inadvertent discovery of human remains. In combination with impacts from cumulative projects, impacts from the Proposed Project would not be elevated to a potentially significant level.

For these reasons, under the Cumulative Condition, including the Proposed Projects, the cumulative impact to cultural resources would be less than significant.

YRDP Cumulative Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains

As explained above, under the Cumulative Condition, including the Proposed Projects, the cumulative impact to cultural resources would be less than significant. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** to cultural resources.

Narrows Cumulative Impact CULT-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains

As explained above, under the Cumulative Condition, including the Proposed Projects, the cumulative impact to cultural resources would be less than significant. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** to cultural resources.

13.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Cumulative conditions under Alternative 1 would include the same YRDP construction activities and the same non-flow YRDP and Narrows Project operations as the Proposed Projects, and the same associated cultural resource impacts associated with those project components. Additionally, the Cumulative Condition for Alternative 1 would include the same past, present, and cumulative projects identified above for the Cumulative Condition for the Proposed Projects. These projects' contributions to the Cumulative Condition are described in Section 13.6.1 above. While Alternative 1 and the Proposed Projects would include differences in flows, with implementation of the project features described in the individual impact analyses above, those flow differences would not materially change the analysis and conclusions in Section 13.6.1 above. Accordingly, the Cumulative Condition, including Alternative 1, would have a less than significant cumulative impact.

YRDP Cumulative Impact CULT-Alt1-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains

As explained above, under the Cumulative Condition, including Alternative 1, the cumulative impact to cultural resources would be less than significant. Accordingly, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** to cultural resources.

Narrows Cumulative Impact CULT-Alt1-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains

As explained above, under the Cumulative Condition, including Alternative 1, the cumulative impact to cultural resources would be less than significant. Accordingly, Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** to cultural resources.

13.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Cumulative conditions under Alternative 2 would include the same YRDP construction activities and the same non-flow YRDP and Narrows Project operations as the Proposed Projects, and the same associated cultural resource impacts associated with those project components. Additionally, the Cumulative Condition for Alternative 2 would include most of the same past, present, and

cumulative projects identified above for the Cumulative Condition for the Proposed Projects. These projects' contributions to the Cumulative Condition are described in Section 13.6.1. The Cumulative Condition for Alternative 2 would not include the HR&L program; however, this would not materially change the analysis and conclusions in Section 13.6.1. While Alternative 2 and the Proposed Projects would include differences in flows, with implementation of the project features and mitigation measures described in the individual impact analyses above, those flow differences would not materially change the analysis and conclusions in Section 13.6.11 above. Accordingly, under the Cumulative Condition, including Alternative 2, the cumulative impact to cultural resources would be less than significant.

YRDP Cumulative Impact CULT-Alt2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains

As explained above, under the Cumulative Condition, including Alternative 2, the cumulative impact to cultural resources would be less than significant. Accordingly, YRDP construction and operations under Alternative 2 would result in a **less than significant cumulative impact** to cultural resources.

Narrows Cumulative Impact CULT-Alt2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains

As explained above, under the Cumulative Condition, including Alternative 2, the cumulative impact to cultural resources would be less than significant. Accordingly, Narrows Project operations under Alternative 2 would result in a **less than significant cumulative impact** to cultural resources.

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CHAPTER 14

TRIBAL CULTURAL RESOURCES

14.1 Introduction

This Chapter describes the environmental setting and regulatory framework for Tribal Cultural Resources (TCRs), and it identifies direct, indirect, and cumulative impacts of the Proposed Projects and Alternatives during construction and O&M.

14.2 Environmental Setting

For Native peoples affiliated with the Project Area, there is not a strict separation of "natural" and "cultural" resources. The proposed Project is within the ancestral territory of Nisenan people. The Nisenan homelands comprise lands and waters of the northern Sierra Nevada and Sacramento Valley and the many river drainages within, including the Yuba River watershed. The current-day cities of Auburn, Folsom, and Nevada City and parts of counties of El Dorado, Nevada, Placer, Sacramento, and Yuba are enveloped by Nisenan homelands and waters. From north to south, Nisenan territory encompasses approximately 5,340 square miles or more than 3 million acres of land (Beals 1933:359). Nisenan peoples historically had relatively easy access to a variety of plants and animals because of the scale of their homeland. Numerous plant resources are available throughout Nisenan ancestral territory, providing food, building material, basketry material, clothing, regalia, boats, and fuel. Families and tribelet members cultivated important raw materials through pruning, removing debris, and prescribed fires (Anderson 2006). There are innumerable resources "important to Nisenan people today as in the past" as "[s]ome plants can indicate the existence of other important sites such as burning grounds and burials, and other cultural resources" (California Heritage: Indigenous Research Project 2022).

Archaeological, ethnographic, and historic-era context presented in Chapter 13, Cultural Resources, provide relevant information to the understanding of TCRs as cultural and historical resources. As evidenced in the context and records search discussed in Chapter 13, the Project Area is overlapped by, and in the vicinity of, several broadly delineated cultural and historical resources throughout the region that hold significance to California Native American tribes, including Properties of Traditional, Religious, and/or Cultural Importance (PTRCI). Describing and/or listing PTRCI is limited by regulations discussed in this document, therefore detailed information about TCRs and other cultural resources is restricted. Confidential information pertaining to the cultural resources within the Project Area is provided under separate cover that is not available to the public.

14.2.1 Flora

Various nuts, seeds, roots, tubers, bulbs, corms, berries, wild grapes, and other greens provided important sources of calories and carbohydrates and were gathered on a seasonal basis (Beals 1933:351). Arguably the most important edible plants were acorns, gathered in fall and tended to by specific families (Beals 1933:63; Lightfoot and Parrish 2009:304). Nisenan peoples stewarded forests and valleys alike (California Heritage: Indigenous Research Project 2022). Table 14.2-1

includes some plants of continuing importance to Nisenan communities (Lightfoot and Parrish 2009).

Table 14.2-1. Flora with continuing importance to Nisenan communities.

Common Name	Type	Scientific Name	Used For	Source page*
Bear grass or white grass	Herbaceous plants	*Xerophyllum tenax*	Baskets	308
Brodiaeas	Herbaceous plants	*Brodiaea; Dichelostemma; Triteleia*	Food	308
Canarygrasses	Herbaceous plants	*Phalaris*	Food	308
Cattails	Herbaceous plants	*Typha*		308
Clarkias or farewell-to-Spring	Herbaceous plants	*Clarkia*	Food	308
Clovers	Herbaceous plants	*Trifolium*	Food; regalia	309
Dandelions	Herbaceous plants	*Taraxacum*	Medicine	309
Dogbane or Indian hemp	Herbaceous plants	*Apocynum cannabinum*	Cordage	309
Goosefoots	Herbaceous plants	*Chenopodium*	Food	310
Ithuriel's spear or grass-nut	Herbaceous plants	*Triteleia laxa*	Food	310
Mariposa lilies	Herbaceous plants	*Calochortus*	Food	310
Milkweeds	Herbaceous plants	*Asclepias*	Cordage; medicine; food	310
Miner's lettuce	Herbaceous plants	*Claytonia perfoliata*	Food	311
Monkeyflower	Herbaceous plants	*Mimulis guttatus*	Food; medicine	311
Native barley	Herbaceous plants	*Hordeum intercedens*	Food	311
Nightshades	Herbaceous plants	*Solanum*	Food; medicine	311
Red maids	Herbaceous plants	*Calandrinia cillata*	Food	311
Sedges	Herbaceous plants	*Carex*	Baskets	312
Soap plant	Herbaceous plants	*Chlorogalum pomeridianum*	Medicine; food; poison; soap	312
Tarweeds	Herbaceous plants	*Madia, Hemizonia and Blepharizonia*	Food; building material	312
Toloache or jimson weed	Herbaceous plants	*Datura wrightii*	Medicine; intoxicant	312
Tules or bulrushes	Herbaceous plants	*Schoenoplectus*	Building material; baskets; clothing; regalia; boats; food; fuel	313
Turkey mullein	Herbaceous plants	*Eremocarpus setigerus*	Poison	313
Wild oats	Herbaceous plants	*Avena*	Food	313
Wild onions	Herbaceous plants	*Allium*	Food	314
Wild strawberries	Herbaceous plants	*Fragaria*	Food	314
Wild sunflowers	Herbaceous plants	*Helianthus*	Food	314
Wild tobaccos	Herbaceous plants	*Nicotiana*	Intoxicant; medicine	313
California maiden-hair fern	Mosses and ferns	*Adlantum jordanii*	Baskets	307
Big-leaf maple	Trees and shrubs	*Acer macrophyllus*	Building material; clothing; food preservation	315
Black oak	Trees and shrubs	*Quercus kelloggii*	Food; building material; fuel; tools; weapons	319
Blue oak	Trees and shrubs	*Quercus douglasii*	Food; building material; fuel; tools; weapons	319
California bay or laurel	Trees and shrubs	*Umbellularia californica*	Medicine; weapons	315
California blackberry	Trees and shrubs	*Rubus ursinus*	Food	316
California buckeye	Trees and shrubs	*Aesculus californica*	Food; tools	316
California hazel	Trees and shrubs	*Corylus cornuta*	Food; basketry; weapons	316
California wild grape	Trees and shrubs	*Vitis californica*	Food; cordage; cooking	316
Canyon live oak	Trees and shrubs	*Quercus chrysolepis*	Food; building material; fuel; tools; weapons	320
Currants and gooseberries	Trees and shrubs	*Ribes*	Food	322
Elderberries	Trees and shrubs	*Sambucus*	Food; musical instruments; tobacco pipes	317
Foothill pine or gray pine	Trees and shrubs	*Pinus sabiniana*	Food; fuel; building material; baskets; medicine	320
Incense-cedar	Trees and shrubs	*Calocedrus decurrens*	Building material; boats; pigment; flavoring	317

Table 14.2-1. (Continued).

Common Name	Type	*Scientific Name*	Used For	Source page*
Interior live oak	Trees and shrubs	*Quercus wislizeni*	Food; building material; fuel; tools; weapons	320
Manzanitas	Trees and shrubs	*Arctostaphylos*	Medicinel food; fuel; tools	317, 318
Mountain dogwood	Trees and shrubs	*Cornus nuttallii*	Medicine	318
Oregon oak	Trees and shrubs	*Quercus garryana*	Food; building material; fuel; tools; weapons	320
Ponderosa pine	Trees and shrubs	*Pinus ponderosa*	Food; building material; fuel; baskets	321
Skunkbush	Trees and shrubs	*Rhus trilobata*	Medicine	322
Sugar pine	Trees and shrubs	*Pinus lambertiana*	Food; building material; food	321
Toyon	Trees and shrubs	*Heteromeles arbutifolia*	Food	322
Valley oak or white oak	Trees and shrubs	*Quercus lobata*	Food; building material; fuel; tools; weapons	320
Western redbud	Trees and shrubs	*Cercis occidentalis*	Baskets	322
White fir	Trees and shrubs	*Abies concolor*	Poison	322
Willows	Trees and shrubs	*Salix*	Baskets; cordage; building material; fuel; clothing; weapons	322
Wormwoods or mugworts	Trees and shrubs	*Artemisia*	Medicine	314
Yerba santa or mountain balm	Trees and shrubs	*Eriodictyon californicum*	Medicine	323

* Lightfoot and Parrish 2009.

14.2.2 Fauna

Fauna of particular importance include antelope, bats, grizzly bear, condor, elk, salmon, mountain lion, ringtail cat, all raptors, fox, woodpeckers, wolves, flicker, lamprey, glow bug, and firefly (California Heritage: Indigenous Research Project 2022). Terrestrial game, such as deer, elk, and rabbit, was seasonally hunted individually or in communal hunts (Beals 1933:346-348). Bears were also hunted, typically in the mountains, though under several cultural prohibitions and precautions. Milkweed nets were often used in rabbit drives in the spring, while spears and bows were used for larger animals like deer and bear (Beals 1933:348) Fish were a substantial part of Nisenan diet, acquired by hook, line, bone-pointed spears, dip nets, weirs, and natural poison. Table 14.2-2 includes some fauna of continuing importance to Nisenan communities (Lightfoot and Parrish 2009).

Table 14.2-2. Fauna with continuing importance to Nisenan communities.

Common Name	Type	Scientific Name	Used For	Source Page*
Turtles	Amphibians and reptiles	*Testudines*	Food	329
Western rattlesnake	Amphibians and reptiles	*Crotalus viridis*	Poison	329
Chinook or king salmon	Anadromous fishes	*Oncorynchus tshawytscha*	Food	326
Pacific lamprey	Anadromous fishes	*Lampetra tridentata*	Food	325
Rainbow trout	Anadromous fishes	*Oncorynchus mykiss, formerly salmo gairdneri*	Food	329
Sturgeons	Anadromous fishes	*Acipenser*	Food	327
Crayfish	Crustaceans and other water invertebrates	*Astacidae*	Food	323
Hardhead	Freshwater fishes	*Mylopharodon conocephalus*	Food	328
Sacramento perch	Freshwater fishes	*Archoplites interruptus*	Food	328
Sacramento splittail	Freshwater fishes	*Pogonichthys macrolepidotus*	Food	328
Sacramento sucker	Freshwater fishes	*Catostomus occidentalis*	Food	328
Steelhead	Freshwater fishes	*Oncorynchus irideus*	Food	329
Thicktail chub	Freshwater fishes	*Gila crassicauda*	Food	329
Angleworms or earthworms	Insects and other terrestrial invertebrates	*Lumbricus*	Food	324

Table 14.2-2. (Continued).

Common Name	Type	*Scientific Name*	Used For	Source Page*
Ants	Insects and other terrestrial invertebrates	*Formicidae*	Food	324
California gall wasp	Insects and other terrestrial invertebrates	*Andricus quercuscalifornicus*	Medicine	324
Caterpillars	Insects and other terrestrial invertebrates	*Lepidoptera*	Food	324
Ceanothus silk moth and polyphemus moth	Insects and other terrestrial invertebrates	*Hyalophora euryalus and antheraea polyphemus*	Musical instruments	324
Grasshoppers	Insects and other terrestrial invertebrates	*Caelifera*	Food	324
Honeybee	Insects and other terrestrial invertebrates	*Apis mellifera*	Food	325
Horseflies	Insects and other terrestrial invertebrates	*Tabanidae*	Food	325
Salmon flies	Insects and other terrestrial invertebrates	*Plecoptera*	Food	325
Yellowjacket larvae	Insects and other terrestrial invertebrates	*Vespula and dolichovespula*	Food	325
American coot	Marine birds and waterbirds	*Fulica americana*	Food; blankets	331
Ducks	Marine birds and waterbirds	*Anatidae*	Food; baskets	330
Geese	Marine birds and waterbirds	*Anatidae*	Food	330
Grebes	Marine birds and waterbirds	*Podicipedidae*	Food	331
Loons	Marine birds and waterbirds	*Gaviidae*	Food	331
Rails	Marine birds and waterbirds	*Rallidae*	Food; blankets	331
Freshwater clams	Shellfish	*Sphaeriidae*	Food; regalia	323
Freshwater pearl mussel and Western ridged mussel	Shellfish	*Margaritifera margaritifera and Gonidea angulata*	Food; tools; lime	323
Band-tailed pigeon and mourning dove	Terrestrial birds	*Patagioenas fasciata and zenaida macroura*	Food; weapons	331
Blackbirds	Terrestrial birds	*Icteridae*	Food; baskets	331
California quail	Terrestrial birds	*Callipepla californica*	Food; baskets; regalia	333
Crows and ravens	Terrestrial birds	*Corvidae*	Regalia	331
Dusky grouse	Terrestrial birds	*Dendragapus obscurus*	Weapons; musical instruments; clothing	332
Falcons	Terrestrial birds	*Falconidae*	Regalia	332
Golden eagle	Terrestrial birds	*Aquila chrysaetos*	Regalia; musical instruments	332
Greater roadrunner	Terrestrial birds	*Geococcyx californianus*	Food; regalia; weapons	332
Hawks	Terrestrial birds	*Accipitridae*	Regalia; weapons; fans	332
Jays	Terrestrial birds	*Corvidae*	Food; regalia	333
Owls	Terrestrial birds	*Tytonidae and strigidae*	Regalia	333
Woodpeckers	Terrestrial birds	*Picidae*	Food; regalia	333
Yellow-billed magpie	Terrestrial birds	*Pica nuttallii*	Regalia	334
Bears	Terrestrial mammals	*Ursus*	Food; clothing; blankets; regalia	334
Black-tailed deer or mule deer	Terrestrial mammals	*Odocoileus hemionus columbianus*	Food; weapons; tools; musical instruments; leather; clothing; blankets; sinew	335
Chipmunks	Terrestrial mammals	*Tamias amoenus and minimus*	Food	334
Foxes	Terrestrial mammals	*Vulpes and Urocyon*	Food(?); leather	335
Gophers	Terrestrial mammals	*Geomyidae*	Food	335
Hares and rabbits	Terrestrial mammals	*Leporidae*	Food; regalia; blankets; clothing	335
Pronghorn	Terrestrial mammals	*Antilocapra americana*	Food; clothing; blankets; leather; containers (horn)	336
Squirrels	Terrestrial mammals	*Sciuridae*	Food	337
Tule elk	Terrestrial mammals	*Cervus elaphus nannodes*	Food; armor	337
Woodrats	Terrestrial mammals	*Neotoma*	Food	337

* Lightfoot and Parrish 2009.

14.2.3 Geology

For Native peoples of the area, granite outcroppings provided raw materials for ground stone, as well as foundations for bedrock milling features. Steatite was used for arrow straighteners, dishes, tobacco pipes, and beads (Lightfoot and Parrish 2009:338). Other local rocks and minerals were used for food additives, pigments, tools, and weapons. Table 14.2-3 includes some fauna of continuing importance to Nisenan communities (Lightfoot and Parrish 2009).

Table 14.2-3. Geology of continuing importance to Nisenan communities.

Common Name	Type	Scientific Name	Used For	Source Page*
Basalt	Rocks and minerals	*Basalt*	Tools; weapons	337
Chert	Rocks and minerals	*Chert*	Tools	337
Clay	Rocks and minerals	*Clay*	Food additive; pigment; pottery	338
Hematite	Rocks and minerals	*Hematite*	Pigment	338
Magnesite	Rocks and minerals	*Magnesite*	Currency	338
Obsidian	Rocks and minerals	*Obsidian*	Tools; weapons	338
Salt	Rocks and minerals	*Sodium chloride*	Not given	338
Steatite or soapstone	Rocks and minerals	*Steatite*	Tools; utensils; weapons	338

* Lightfoot and Parrish 2009.

14.2.4 Identification of Tribal Cultural Resources

To date, the methodologies, techniques, and values of "whitestream" (Denis 1997:13) archaeological and ethnographic Cultural Resource Management (CRM) investigations have dominated NHPA reviews and cultural resource surveys and inventories of the Project Area.[1] As no previous CEQA TCR reviews were conducted prior to the issuance of the FEIS, Yuba Water conducted a TCR study for the YRDP. Results of the TCR study are confidential and provided under separate cover that is not available to the public. Anticipating concerns that may arise from those unfamiliar with tribally oriented conceptual engagements and methodologies, it is important to consider as part of both NHPA and CEQA review and compliance that it would be a mistake to characterize or understand tribal geographies of sacredness and significance as either isolated or uniform ones. Rather, tribal sacred geographies and geographies of religious and cultural significance exist in and as "landscape[s] [that are] differentiated; some places are more significant than others,...places differ in their uses and meanings" (Miller 1998:90). It is within these contexts that California Native American Tribe(s)' concerns over identification, evaluation, and assessment efforts in historic property and environmental reviews must be situated (Moore 2022, 2023). United Auburn Indian Community (UAIC) has stressed that:

> Lack of archaeological evidence for a site or place does not constitute proof that a Tribally identified historic property of religious and cultural significance is not present. It simply means that one line of evidence is not present. Archaeological

[1] One historic property/cultural resource study has been conducted for the Narrows Project (Flint et al. 2021). Two historic property/cultural resource studies and associated supplemental reports have been conducted for the YRDP relicensing. These consist of an archaeological and built environment resource inventory (Ramsey Ford et al. 2014); a 2016 supplemental archaeological inventory (Ramsey Ford et al. 2016); a 2018 supplemental archaeological inventory (Ramsey Ford et al. 2018); and an ethnographic, ethnohistoric, and TCP study (Blount et al. 2013) and its supplemental investigation (Blount 2018). The latter study and its supplement focus on the settler colonial infrastructure of the Cottage Creek Campground and does not present sufficient tribal worldview, axiological, epistemological, or ontological contexts to provide informed evaluations and assessments of extant PTRCIs/TCPs/TCRs including TCLs and the historic districts they may comprise.

> methods and Tribal methods of identification must not be conflated, as doing so can lead to the undermining of Tribal knowledge and the preservation and protection of Tribally identified historic properties (Moore 2022).

As this suggests, while mainstream CRM observations and insights may align in some ways with concepts and methods of Indigenous Knowledge, they by no means can adequately define or substantively encompass the full spectrums and depths of insights, understandings, and details of the social and ancestral, temporal/historical, and spatial/geographical significance contained in and conveyed by tangible ancestral heritage materials commonly documented and recorded as "archaeological" (Moore 2022). "It follows that Tribal perspectives must be used to identify Tribal values during the identification and evaluation process" (Moore 2022:6). This position is supported by stipulations at 36 C.F.R. 800.4(c)(1), PRC § 21080.3.1, and was recently reinforced at the federal level by both the White House (Prabhakar and Mallory 2022) and the ACHP (ACHP 2024).

Two systems exist through which NRHP eligibility can be determined for places or properties with TCP status or significance. The first is found at 36 C.F.R. Part 63 and consists of a lengthy process and layered levels of state and federal reviews for formal determination by the Keeper of the NRHP. The second system is promulgated in ACHP regulations at 36 C.F.R. 800.4(c), and permits federal agencies and SHPOs or Tribal Historic Preservation Officers, as applicable, to agree to consider a historic property or place eligible for listing in the NRHP for purposes of NHPA Section 106 review.

Similarly, determinations of significance following the formal nomination procedures for listing in the CRHR are not necessary for full consideration of TCRs under the CEQA process if a lead agency determines that a given TCR is potentially eligible for listing in the CRHR for the purposes of determining whether a significant effect or impact would occur (C.C.R. Title 14, 15382). The OPR outlines what is required as part of this determination process.

> When a lead agency chooses to treat a resource as a tribal cultural resource, that determination shall be supported with substantial evidence, applying the criteria in the historical register, and considering the significance of the resource to a California Native American Tribe. (PRC § 5024.1, PRC § 21074) (Office of Planning and Research 2017:4).

PRC § 21080(e)(1) defines "substantial evidence" as that which "includes fact, a reasonable assumption predicated upon fact, or expert opinion supported by fact." PRC § 21080(e)(2) clarifies that this definition means that "[s]ubstantial evidence is not argument, speculation, unsubstantiated opinion or narrative, evidence that is clearly inaccurate or erroneous, or evidence of social or economic impacts that do not contribute to, or are not caused by, physical impacts on the environment."

Central to these considerations and definitions are mandates outlined at PRC § 21080.3.1, which recognize "that California Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources," and those at PRC § 21080.3.1(b), which require lead agencies to consult with any California Native American Tribe that formally requests consultation and is traditionally and culturally affiliated with the project

area of concern. In respect to considerations of TCR CRHR eligibility or potential eligibility and how associated "facts" and factual evidence may be ascertained, OPR guidance notes:

> Evidence that may support such a finding could include elder testimony, oral history, tribal government archival information, testimony of a qualified archaeologist certified by the relevant tribe, testimony of an expert certified by the tribal government, official tribal government declarations or resolutions, formal statements from a certified Tribal Historic Preservation Officer, or historical/anthropological records (Office of Planning and Research 2017:4).

Once eligibility or potential eligibility of TCRs has been determined following the CEQA process, including appropriate levels of consultation with an affiliated Native American Tribe (or Tribes), adverse effects to TCRs must be determined. PRC § 21084.2 states that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." PRC § 21080.3.1(b) provides that if a lead agency determines that a project has the potential to cause a substantial adverse change in the significance of TCRs, that agency must consider measures to avoid, minimize, and/or mitigate that impact in consultation with the California Native American Tribe (or Tribes) for whom TCRs associated with the project are significant. PRC § 21080.3.1(b) additionally states that consultation must occur prior to the release of any negative declaration, mitigated negative declaration, or Environmental Impact Report for a project.

To date, there is very little formal California State guidance and no formal standards on how to effectively account for or adequately consider TCRs and significant adverse changes to them as part of the CEQA review process. The resource category TCR, however, is essentially the CEQA equivalent of PTRCIs (36 C.F.R § 800.16[l]) at the federal level under the NHPA, and TCPs in applicable NHPA guidance of National Register Bulletin 38, *National Register Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998); see also C.C.R. Title 14, 4852).

In its Technical Assistance Series #6: California Register and National Register: A Comparison (for purposes of determining eligibility for the California Register), the California Office of Historic Preservation advises:

> When trying to determine if a resource is eligible for the California Register, you may find it easier to first determine a resource's eligibility for the National Register. Then, if you find it ineligible for the National Register–and keeping in mind the differences between the two programs–move on to determine if it may in fact be eligible for the California Register as a result of these differences (Office of Historic Preservation n.d.:1).

To orient analyses toward TCRs, it is important to navigate and correspond terminology and procedures of the NHPA Section 106 process to CEQA and its AB 52 additions. Like TCPs, TCLs are a form of significance (ACHP 2012); unlike TCPs, however, TCLs are essentially the TCR category type "cultural landscape" when defined in terms of scope and extent.

For consulting tribes and a multitude of other Indigenous peoples, accounting for TCPs, TCRs, TCLs, or PTRCIs—each term often referring to the same tangible thing(s) for tribal nations and communities—requires attentive considerations to where events occur and have occurred. This geographical context is often far more important for evaluating the significance and assessing the integrity of properties, places, landscapes, and other TCRs than when events occurred (Deloria 1994). In 14.2.4.1, the TCR study is contextualized within such *spatially oriented* perspectives, insights, sensibilities, and contexts of consulting tribes to discuss how the identified resources connect and interrelate as contributing parts of a historic district and defined TCL. Evaluations and assessments are then provided under both the NHPA and CEQA inclusive of and guided by tribal knowledge, perspectives, and values. The study report closes with known or reasonably foreseeable direct, indirect, and cumulative adverse effects assessments of the Proposed Projects on consulting tribes' TCRs.

14.2.4.1 TCR Study Findings

Nisenan traditional history conveys and teaches that all traditional lands hold potential powers and that there are indelible interconnections among and between humans, animals, land, and water that emerged and have persisted since time immemorial (Beals 1933). These powers, knowledge, and lessons are available to be recovered and reactivated by Tribes now (Moore 2022) including at and within all ancestral places designated and recorded as "archaeological." This includes those situated within the exterior boundaries of the Proposed Project area and listed in Table 14.2-4.

Table 14.2-4. Ancestral Resources in the Project Area.

Primary Number	Trinomial	Forest Service Number	Description
P-58-000029	CA-YUB-11	-	Lithic scatter, possible pause/camp or dwelling/occupation area.
P-58-000036	CA-YUB-18	-	Milling feature, dwelling/occupation area
P-58-000037	CA-YUB-19	-	Milling feature, dwelling/occupation area
P-58-000038	CA-YUB-20	-	Dwelling/occupation area
P-58-000039	CA-YUB-21	-	Milling feature, dwelling/occupation area
P-58-000040	CA-YUB-22	-	Milling feature
P-58-000041	CA-YUB-23	-	Milling feature
P-58-000042	CA-YUB-24	-	Milling feature
P-58-000043	CA-YUB-25/H	-	Milling feature, dwelling/occupation area
P-58-000044	CA-YUB-26/H	-	Lithic scatter, dwelling/occupation area
P-58-000886	CA-YUB-868	05-17-53-126	Milling feature
P-58-000905	CA-YUB-887	05-17-53-127	Milling feature
P-58-000912	CA-YUB-894	-	Milling feature
P-58-001072	CA-YUB-1054	05-17-53-72	Lithic scatter, dwelling/occupation area
P-58-001918	CA-YUB-1574	05-11-53-508	Milling feature
P-58-001579	-	-	Milling feature
P-58-002721	CA-YUB-1722	05-17-53-1001	Milling feature
P-58-002725	CA-YUB-1726	05-11-53-1088	Milling feature
P-58-002726	CA-YUB-1727	05-11-53-01089	Milling feature
P-58-002727	CA-YUB-1728	05-17-53-1002	Milling feature
P-58-002728	CA-YUB-1729	05-17-53-1003	Lithic scatter
P-58-002729	CA-YUB-1730	05-17-53-1004	Lithic scatter
P-58-002730	CA-YUB-1731	05-17-53-1005	Lithic scatter
P-58-002767	CA-YUB-1761	-	Milling feature, handstone, lithic scatter
P-58-002769	CA-YUB-1763	-	Handstones, fire-cracked rock, other tools and flakes

Table 14.2-4. (Continued).

Primary Number	Trinomial	Forest Service Number	Description
P-58-002770	CA-YUB-1764/H	-	Milling features, dense collection of tools
P-58-002773	CA-YUB-1767	-	Lithic scatter with handstones
P-58-002688	-	-	Basalt flake
P-58-002689	-	-	Quartz core
P-58-002690	-	-	Two basalt flakes
P-58-002691	-	-	Cryptocrystalline silicate flake
P-58-002700	-	-	Metavolcanic flake
P-58-002780	-	-	Core/chopper
P-58-002785	-	-	Sierra Contracting Stem projectile point
P-58-002786	-	-	Handstone
P-58-002787	-	-	Battered cobble
P-58-002788	-	-	Sierra Contracting Stem projectile point
P-58-002789	-	-	Projectile point fragment
P-58-002790	-	-	Pestle
P-58-002791	-	-	Projectile point fragment
P-58-002795	-	-	Handstone
P-59-003801	-	-	Cottage Creek Use Area Historic District

Honoring and abiding by the lessons and insights of Indigenous Knowledge for the Proposed Project area was facilitated by taking a cultural geographic view of known and extant ancestral material recorded as "archaeological" and methodologically employing a "contextual approach" to these and other tangible landmark and wider landscape PTRCIs. This contextual approach builds from "progressive contextualization" methods advanced in human ecology and "advocates the analysis of one type of resource or interaction, widening progressively as interconnections between resources and interactions become manifest". The appropriate applicability of this approach to adequately ethnographically diagram tribal relationships and concerns with and to the Proposed Project area specifically and Yuba Water service district lands and waters more generally was conveyed by UAIC traditional knowledge bearer and cultural practitioner Alan Wallace, who shared that "[t]hese sites all in here [in the Yuba Water service district] would have been all connected" (Alan Wallace, interview September 28, 2023).

In the diverse spatial contexts of PTRCI historic districts and TCR defined TCLs, the ancestral places and materials that are of interest to archaeologists and deemed worthy to record and document as "archaeological" can serve as informative entrance and exit places—but never stopping or end points—to better understanding consulting tribes' relationships with and to the total environment of the Yuba Water service district. Each of the places and resources recorded as "archaeological" and identified in Table 14.2-4 are one form of evidence of the material nodes, circuits, and processes of ancestral and familial traditions of movement, pause, and return connecting, unifying, and contributing to the TCL as an intensive historic district.

As such, and following the guidance of *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (National Park Service 1997) and Bulletin 38 (Parker and King 1998), the Yuba Water service district lands and waters both corresponds to the NRHP-eligible PTRCI property type "historic district" (see National Park Service 1997) and the ACHP definition of Native American TCLs. ACHP guidance on Native American TCLs states that "[t]here is no single defining feature or set of features that comprise" these areas of interrelated significance. Rather:

> Such places could be comprised of natural features such as mountains, caves, plateaus, and outcroppings; water courses and bodies such as rivers, streams, lakes, bays, and inlets; views and view sheds from them, including the overlook or similar locations; vegetation that contributes to its significance; and, manmade features including archaeological sites; buildings and structures; circulation features such as trails; land use patterns; evidence of cultural traditions, such as petroglyphs and evidence of burial practices; and markers or monuments, such as cairns, sleeping circles, and geoglyphs (Advisory Council on Historic Preservation 2012:4).

The ACHP further underscores "that the size of such properties or the potential challenges in the management of them should not be considerations in the evaluation of their significance" (Advisory Council on Historic Preservation 2012:2).

For the purposes of the current assessment pursuant to CEQA for the Proposed Project and best management and stewardship considerations and practices, the geographical boundaries of the historic district can be understood to correspond to all lands and waters within the exterior boundaries of the Yuba Water service district. The Proposed Project area is a defined component TCL of this district.

Bulletin 38 notes that delineating and documenting boundaries of places and landscapes of traditional religious and cultural importance "can present considerable problems…. In defining boundaries, the traditional uses to which the property is put must be carefully considered" (Parker and King 1998:18-19). Bulletin 38 further explains:

> Changes in boundaries through time should also be taken into consideration. For example, archeological [or other] evidence may indicate that a particular cultural practice occurred within particular boundaries in the past, but the practice today may occur within different boundaries—perhaps larger, perhaps smaller, perhaps covering different areas. The fact that such changes have taken place, and the reasons they have taken place, if these can be ascertained, should be documented and considered in developing a rationale for the boundaries identified in the … eligibility documentation (Parker and King 1998:19).

Tom King, co-author of Bulletin 38, expands on required processes for boundary determinations for places, properties, and landscapes with TCP significance, noting that:

> determining a place eligible for the National Register serves a different purpose than does actually listing it. Listing is a formal action that conveys permanent status, at least in the eye of the beholder, and often in law. Determining a place eligible simply represents a judgment that for purposes of the action under review, the place appears to meet National Register Criteria. Sometimes making this determination, or determining what effects an action may have on a place, requires considering boundaries; other times boundary definition is irrelevant (King 2003:170).

The boundary determination has been developed to both address CEQA TCR requirements and to facilitate good faith, reasonable, and meaningful consultation through NHPA and CEQA

regulatory pathways that immediately afford the full rights and opportunities to tribes to support and enhance historic property/PTRCI/TCR protection and preservation strategies for the Proposed Project as well as the indelibly interconnected wider service district lands, airs, and waters.

Despite certain zones of intensive post-contact mining and development such as the New Bullards Bar Dam and Reservoir, and other Proposed Project facilities throughout its land/waterscape, the historic district retains its integrity of location and setting in the wider Nisenan traditional territory, its overall topographical design and setting as a geographical area formed through ancestral practices of movement, pause, and return that created the very circuits that help tie together, unify, and define the TCL, its overall feeling as an informational reservoir that can tangibly convey and reconnect with elements of tradition and Creation in this place, and most importantly for its traditional religious and cultural significance, integrity of association as a place and land/waterscape important to and for the endurance and capacities of consulting tribes and broader tribal knowledge systems, beliefs, and practices that have endured since time immemorial. The Yuba Water TCL historic district is not excluded from NRHP eligibility by any of the NRHP Criteria Considerations, and its significance extends well over 50 years.

As a historically and geographically delineable historic district and definable TCL that is composed of a wide variety of interconnected and functionally and historically related resources and elements, the Yuba Water TCL historic district has both stand-alone significance and contributes to the broader traditional cultural importance and contexts of consulting tribes' traditional territories. Its total environment continues to convey specific events that have made significant contributions to the broad patterns of Nisenan history, and it is a place that continues to be stewarded by consulting tribes and fundamentally important for the trajectories, maintenance, and perseverance of living traditional religious and cultural gathering and ceremonial practices central to consulting tribes and broader Nisenan history, heritage, obligation, and identity.

Members of consulting tribes have inherent connections to their ancestors, their traditional lands, and origin areas, and emphasize that "[p]lace or territory is a fundamental component of Indigenous peoplehood interconnected with language, ceremonial cycles, sacred history, lifeways, and religious expression. [Consulting tribes ascribe] religious and cultural significance to many Tribal cultural and ecological resources" (Moore 2023:5). These include ancestral places recorded and documented as "archaeological," and topographic features, waterways, and their associated cultural landscapes.

The Yuba Water TCL historic district corresponds to a geographic area fundamental to consulting Tribes' trajectories, identities, and associated relational life and lifeway systems as a people and ongoing monitoring and stewardship practices as distinct and unique peoples. It therefore meets Criterion A of the NRHP and Criterion 1 of the CRHR. Significance and integrity under Criterion B of the NRHP and Criterion 2 of CRHR are present, but are not included with any details in order to protect the confidentiality of those individuals and their descendants. The Yuba Water TCL historic district meets Criterion C of the NRHP and Criterion 3 of the CRHR because of the architectural significance of dwelling and bedrock milling feature sites within the western foothills of the Sierra Nevada. As a defined TCL that functions as the material content and tangible geographical substance of consulting Tribes' Indigenous cultural stories and practices, and which provides unique opportunities and capacities for intergenerational teaching and learning about their sacred histories, sacred geographies, and unique human-environment relationships, practices,

and identities, the Yuba Water TCL historic district also meets Criterion D of the NRHP and Criterion 4 of the CRHR. While certain questions can be addressed in ways through archaeology—such as certain material relations between the ancestral places identified in Table 14.2-4, and natural-cultural resources, and material circuits and formations manifested through ancestral practices of movement, pause, and return radiating to and from consulting Tribes' traditional territory—many layers and dimensions of the important information potential under Criterion D/4 is tribally and (potentially) ethnographically defined.

14.2.4.2 Tribal Consultation

Yuba Water previously distributed to California Native American tribes a notice of opportunity to consult pursuant to AB 52 for the YRDP relicensing on February 19, 2021 (PRC § 21080.3.1[d]). The contact list was developed through ongoing relicensing efforts in coordination with the California Native American Heritage Commission (NAHC), as well as formal requests from Shingle Springs Rancheria and UAIC for notification and information on Proposed Projects for which Yuba Water will serve as lead agency under CEQA in accordance with PRC § 21080.3.1(b). Outreach and engagement with UAIC resulted in two field trips in 2023. UAIC representatives participated in the field trips, providing UAIC perspectives and insights.

Yuba Water subsequently paused its CEQA process, including AB 52 consultation, for the YRDP relicensing to reevaluate the scope of the proposed CEQA review. Yuba Water has since decided to simultaneously review the YRDP relicensing with the Narrows Project relicensing in a joint CEQA document.

As part of reinitiating the AB 52 process in 2024, Yuba Water sent emails to each potentially interested California Native American Tribe on October 18, 2024, of an early engagement opportunity to discuss the Proposed Projects prior to formal AB 52 consultation notification. Yuba Water formally re-initiated the CEQA and AB52 processes and procedures by sending letters on October 31, 2024, via email and United States Postal Service of the opportunity to consult to Native American tribes that requested formal notification, and courtesy notification to other potentially interested California Native American tribes identified by the NAHC. UAIC and Enterprise Rancheria Estom Yumeka Maidu (Enterprise Rancheria) have each requested consultation for the Proposed Projects in response to the notice of opportunity. Yuba Water provided requested information to each Enterprise Rancheria and UAIC in November 2024 and updated information in March and July 2025. Consultation with Enterprise Rancheria and UAIC has not yet concluded in accordance with PRC 21080.3.2(b). The results of the consultation shall be presented in the Final EIR for the project.

14.3 Regulatory Setting

The following regulations, plans, and policies provide relevant definitions and regulatory context for the impact discussion that follows.

14.3.1 Tribal Resources

The 2019 FEIS (FERC 2019) describes cultural resources identification efforts made between 2009 and 2018 during relicensing studies for the Yuba River Development Project in support of

obligations of the FERC under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470 et seq.) (Federal Energy Regulatory Commission 2019:3-420 through 423-427, 423-430 through 423-431). Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties. For purposes of the discussion regarding TCRs, it is important to underscore that historic properties include PTRCI Indian tribes or Native Hawaiian organization that meet National Register of Historic Places (NRHP) criteria (36 C.F.R. § 800.16[l]).

It is also necessary to state that an identification, evaluation, or designation of TCP status is an expression of a form of significance; it is not, on its own, an NRHP eligible property type. Every eligible NRHP property type—object, site, structure, building, historic district (National Park Service 1997; Parker and King 1998)—potentially may hold or convey the status of a TCP. TCPs are properties associated with cultural practices or beliefs of a living community that are rooted in that community's history, and important in maintaining the continuing cultural identity of a community. TCPs can refer to properties of importance to any community, including Indigenous communities. The term or category of Traditional Cultural Landscape (TCL) encompasses the same meaning and utility, as well as inclusivity of Indigenous communities. The Secretary of the Interior's Guidelines for the treatment of cultural landscapes define a cultural landscape as "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values" (Birnbaum and Peters 1996:4). Historic vernacular landscapes "evolved through use by the people whose activities or occupancy shaped them" and ethnographic landscapes "contain a variety of natural and cultural resources that associated people define as heritage resource" (Ball et al. 2015; Birnbaum and Peters 1996:4).

TCRs are similar to TCPs in terms of their characteristics, identification, and treatment, and may include a cultural landscape to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. As defined at PRC § 21074, a TCR is a site, feature, place, cultural landscape, sacred place or object that is of cultural value to a California Native American Tribe and is either: (A) included or determined to be eligible for listing in the California Register of Historical Resources (CRHR), or (B) included in a local register of historical resources. A TCR may also be a resource determined by the lead agency, at its discretion and with substantial evidence, pursuant to CRHR criteria for a historical resource (PRC § 5024.1[c]). Per California Health and Safety Code 8012 (k)(p), Tribal expertise and knowledge constitutes substantial evidence. Additionally, as defined at PRC § 21074(c), a historical resource, a unique archaeological resource, or a non-unique archaeological resource may also be a TCR if it conforms to the criteria of a TCR in PRC § 21074(a) (see Chapter 13, Cultural Resources). In accordance with CEQA guidelines, investigations are necessary, in part, to identify TCR that may have significant impacts as a result of a project (14 C.C.R. §15064.5). A TCR may be eligible for inclusion in the CRHR if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Criterion 1)
2. Is associated with the lives of persons important in our past (Criterion 2)

3. Embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values (Criterion 3)
4. Has yielded, or may be likely to yield, information important in prehistory or history (Criterion 4)

The following steps are routinely implemented in a cultural resource investigation for CEQA compliance:

1. Identify cultural resources in the Project Area;
2. Evaluate resources against the CRHR criteria of significance (listed above);
3. Evaluate the impacts of the Proposed Projects on all cultural/tribal resources; and
4. Develop and implement measures to mitigate Proposed Projects impacts on historical resources or resources deemed significant by the lead agency (e.g., TCRs).

Information on cultural resources investigations is provided below.

14.3.2 Assembly Bill (AB) 52 and Consultation

A project may induce a significant impact to a historical resource, unique archaeological resource, or a TCR if it causes a substantial adverse change (i.e., physical demolition, destruction, relocation, or alteration) to the resource or immediate surroundings (14 C.C.R. 15064.5[b]), thereby demolishing or significantly altering the physical characteristics that qualify it for listing in the CRHR or local registers (PRC §§ 5020.01[k] and 5024.1[g]). A project that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment (PRC § 21084.2). A lead agency shall establish measures to avoid impacts that would alter significant characteristics of a TCR, when feasible (PRC §21084.3).

To help determine whether a project may have such an effect, PRC § 21080.3.1 requires a lead agency to consult with any California Native American Tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of the Proposed Projects.[2] That consultation must begin prior to the release of a negative declaration, mitigated negative declaration, or Environmental Impact Report for a project. If a lead agency determines that a project may cause a substantial adverse change to TCRs, the lead agency must consider measures to mitigate that impact.

As the lead agency for CEQA, Yuba Water is responsible for consultation with Native American tribes regarding the potential for a project to impact TCRs, pursuant to AB 52 and PRC §§ 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, 21084.3, and 5097.94(m). AB 52 recognizes that "...tribes may have expertise with regard to their tribal history and practices, which concern the tribal cultural resources with which they are traditionally and culturally affiliated..."

[2] PRC §21080.3.1 (a) and Government Code §65352.4 define consultation as "the meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties' cultural values and, where feasible, seeking agreement. Consultation between government agencies and Native American tribes shall be conducted in a way that is mutually respectful of each party's sovereignty. Consultation shall also recognize the tribes' potential needs for confidentiality with respect to places that have traditional tribal cultural significance."

and that consultation will occur between a lead agency and Native American tribes for covered projects. As such, Yuba Water is committed to working together with tribes and fulfilling consultation responsibilities to California Native American tribes as described.

14.4 Impact Assessment Methodology

In considering potential adverse effects on TCRs, another term for historic properties with traditional cultural importance, National Register Bulletin 38 (Parker and King 1998:21) cites alterations to a property's character and setting and the introduction of visual, audible, or atmospheric elements that may undermine the integrity of association or condition of a property. Such adverse effects may be direct, indirect, and/or cumulative in nature. In comparison and contrast to National Register Bulletin 38, PRC § 21084.2 stipulates that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." PRC § 21080.3.1(b) stipulates that if a lead agency determines with substantial evidence that a project has the potential to cause a substantial adverse change in the significance of TCRs, that agency must consider measures to avoid, minimize, and/or mitigate that impact in consultation with the California Native American Tribe (or Tribes) for whom TCRs associated with the project are significant.

Similar to State Office of Historic Preservation guidance and eligibility determinations, identifying what may be a significant impact on a TCR under CEQA can be facilitated through a synthesis of federal standards and associated guidance of the NHPA, NRHP, and Bulletin 38. C.F.R. 800.5 outlines what may be considered an adverse effect to a historic property, stating:

> An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative [C.F.R. 800.5(a)(1)].

Adverse effects from Proposed Projects actions and activities have the potential to occur directly, indirectly, and cumulatively within the Project Area on overall character and setting of identified TCRs. To disturb or destroy these places and resources is to irretrievably lose the historical insights and wisdom of the ancestors who fashioned this material heritage. To disturb or destroy associated connected resources such as water bodies, flora species, and traditionally important habitats is to destabilize and/or potentially destroy the integrity of condition of their relational life, but also adversely affect those ancestral places designated and recorded as "archaeological sites" and archaeological/artifact "isolates."

The criteria for assessment of adverse effects and environmental impacts to TCRs are a synthesis of Bulletin 38 guidance on the integral religious and cultural significance and function of traditional cultural places and resources, information and insights from consulting tribe

representatives, and 36 C.F.R. 800.5 measures for adverse effects on historic properties. Assessments of adverse effects potentially resulting from Proposed Projects actions and activities are identified according to the adverse effects criteria at 36 C.F.R. 800.5(a)(2)(i–vii)) with appropriate modifications for consulting tribes' cultural relationships, knowledges, and contexts.

14.4.1 Construction

Substantial adverse change in significance of an historical resource includes "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings" (PRC 21084.2) Various construction activities, detailed in Chapter 2, Project Description, of this document, are scheduled throughout the term of the YRDP relicensing and include the New Colgate Powerhouse New Tailwater Depression System (TDS), modifications to Our House Diversion Dam and Log Cabin Diversion Dam Fish Release Outlets, modifications to Lohman Ridge Diversion Tunnel Intake, Recreation Facilities, and Primary Project Roads and Trails and Recreation Roads. There would be no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

Construction projects will likely involve ground disturbance including excavation, vibration, and removal/replacement/upgrade of architectural resources (e.g., generation and non-generation facilities, recreational facilities, etc.) and vegetation (e.g., trees, stumps, shrubs). Constructing these projects may also affect the biological resources community (e.g., fishes, riparian vegetation), visual setting, noise levels, and air quality, among other resources.

If construction activities for any of the projects included in the license were to result in either a direct impact (e.g., physical modification, damage, or destruction) or an indirect impact (e.g., alteration to setting, biological community, or visual setting) on any TCRs as defined in PRC § 21074, the impact would be potentially significant.

14.4.2 Operations

Proposed Projects operations not only include operation and use of facilities and recreation areas, but also the implementation of all proposed measures and plans in the new license including changes in reservoir elevations, flows, and other O&M related activities. Yuba Water does not propose adding any previously constructed, unlicensed water-power structures to the Proposed Projects. The Proposed Projects do include significant updates to existing facilities that could result in impacts on TCRs and may include impacts made by the public during use of Proposed Project facilities, including vandalism. If operations activities included in the license were to result in substantial adverse change in the significance of a TCR, the Proposed Project may have a significant effect on the environment (PRC § 21084.2).

14.4.3 Impact Indicators and Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for assessing whether a project would have significant impacts on the environment. In consideration of project-specific environmental conditions, and based on Appendix G of the CEQA Guidelines, Yuba Water has determined that an impact on TCRs would be considered significant if the project causes a substantial adverse change in the significance of a TCR defined in PRC § 21074 as either a site, feature, place, cultural

landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

- **Impact TCR-1:** Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC § 5020.1(k), or
- **Impact TCR-2:** A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC § 5024.1. In applying the criteria set forth in subdivision (c) of PRC § 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.

All TCR identified within the Project Area fall under Impact TCR-1 as they are eligible for listing in the CRHR. There are no TCR that could potentially be impacted by YRDP or Narrows Project operations along the lower Yuba River; therefore, the analysis focuses on potential changes in the area above Englebright Reservoir from YRDP construction and operations. Impacts related to YRDP and Narrows Project operations below Englebright Reservoir are not analyzed further. As there are no TCR subject to Impact TCR-2, there is no impact under the criteria and no further discussion for Impact TCR-2 is provided.

14.5 Environmental Impact Analysis

14.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact TCR-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

Rehabilitation proposed at Garden Point Boat-in Campground has the potential to impact CA-YUB-22, a contributing TCR of the defined component TCL of the Yuba Water service district and historical resource (Dunigan 2025), through ground disturbing activities that may cause a substantial adverse change in its significance (PRC § 21048.3(b)). Additional nearby TCR include CA-YUB-1761, CA-YUB-1763, and CA-YUB-1764/H. Each of these resources are currently inundated by the New Bullards Bar Reservoir and would not be subject to disturbance from the rehabilitation.

As described in Chapter 13, Cultural Resources, **Project O&M** is not anticipated to cause significant fluctuations in water levels and/or wave action that would increase erosion of site sediments on the shore of New Bullards Bar. Under the Existing Condition, Project O&M (recreational wave action) has contributed to erosion at five contributing TCR of the defined component TCL of the Yuba Water service district (CA-YUB-1728; CA-YUB-1761; CA-YUB-1763; CA-YUB-1764/H; and CA-YUB-1767), as well as vegetation management, facilities management, and recreational activities and potential for looting at three of these same TCRs (CA-YUB-1728, CA-YUB-1761, and CA-YUB-1767) (Ramsey et al. 2016). Accordingly, the Proposed YRDP Project would not cause a substantial adverse change in the significance of a TCR.

Moreover, as described in Chapter 13, Cultural Resources, as part of the Proposed YRDP Project, Yuba Water is required to revise the 2016 draft HPMP for the YRDP. These revisions to the HPMP will incorporate tribal value-based mitigation measures including, but not limited to: creation of greenspace; access to, funding for, and stewardship and documentation of resources; preservation in place of other TCRs/TCPs/PTRCIs, donation of cultural preservation equipment; culturally appropriate item reproduction; reintroduction and promotion of native plants; and cultural programming and educational materials funding (Moore 2023:11). The revised HPMP will guide resource protection for all TCR described in this section. Therefore, the Proposed YRDP Project would not result in a significant impact relative to the Existing Condition and impacts to TCRs are **less than significant**.

14.5.2 Alternative 1 Compared to the Existing Condition

YRDP Impact TCR-Alt-1-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

Under Alternative 1, YRDP construction and ground-disturbing activities would be the same as those identified above for the Proposed Project *YRDP Impact TCR-PP-1* (see Section 14.5.1). As described in 13.5.2, the YRDP operational impacts for Alternative 1 differ slightly from the Proposed Projects. Reoperation of additional flow is not anticipated to directly affect TCRs as flows are intended to maintain operational lake levels during Dry and Critically Dry years. Alternative 1 may also increase or decrease recreational access to the lake. Potential increased recreation and subsequent wave action and corresponding erosion would not result in increased impacts beyond the Existing Condition and potential reduced recreation may be beneficial for TCRs. Therefore, Alternative 1 impacts to TCRs are considered **less than significant**.

Indirect Impact TCR-Alt-1-1: Indirect Impacts to TCRs Upstream of YRDP from YB/DS Operations under Alternative 1

Alternative 1 includes a contribution of 15,600 ac-ft of water from the Yuba-Bear/Drum-Spaulding projects that would be provided in Dry and Critically Dry Years under new FERC licenses for those projects. The following discussion provides a programmatic analysis of the potential indirect impacts to TCRs in areas upstream of the YRDP associated with this component of Alternative 1.

As explained in the Nevada Irrigation District Yuba-Bear Hydroelectric Project MND,[3] there are TCRs present along the Middle and South Yuba River which could be impacted by the hydrological changes associated with the release of these additional flows before the water reaches YRDP facilities and reaches in Dry and Critically Dry Years; however, the exact nature and location of these resources is unknown.

YB/DS operations under Alternative 1 would be subject to their own project specific HPMPs as part of their FERC relicensing, which include protections for TCRs. Additionally, for purposes of this programmatic analysis, it is reasonably foreseeable that YB/DS operations under Alternative

[3] The MND's discussion of TCRs is incorporated by reference and is available online at https://www.nidwater.com/files/a21d4c3d3/NID+Yuba-Bear+Draft+CEQA+Supp.+Analysis+IS-MND+06162025.pdf.

1 would include available protective measures developed in consultation with Native American Tribes pursuant to AB 52 and collaboration with regulatory agencies to ensure that those operations would not cause substantial adverse changes in TCRs upstream of the YRDP. Therefore, Alternative 1 indirect impacts from YB/DS operations on TCRs upstream of the YRDP would be **less than significant**. As explained in Chapter 3, the YB/DS relicensings are subject to their own CEQA process. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

14.5.3 Alternative 2 Compared to the Existing Condition

YRDP Impact TCR-Alt-2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

Under Alternative 2, construction and ground-disturbing activities would be the same as those identified above for the Proposed Project *YRDP Impact TCR-PP-1* (see Section 14.5.1.1). Alternative 2 hydrological operational changes are not anticipated to impact any TCR beyond that described in *YRDP Impact TCR-PP-1*. As with *YRPD Impact TCR-PP-1,* impacts to TCR are **less than significant**.

14.5.4 No Project Alternative Compared to the Existing Condition

YRDP Impact TCR-NP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

The No Project Alternative would not include the construction of new, expanded or modified YRDP facilities and would not cause physical destruction of or damage to all or part of a TCR/PTRCI (36 C.F.R. 800.5[a][2][i]); preservation, rehabilitation, restoration, or reconstruction of TCR/PTRCI as part of Project activities (36 C.F.R. 800.5[a][2][ii]); removal of a TCR/PTRCI from its historic location (36 C.F.R. 800.5[a][2][iii]); change of the character and use of a TCR/PTRCI or of physical features within the TCR/PTRCI's setting that contribute to its traditional religious and cultural importance (36 C.F.R. 800.5[a][2][iv]); and the introduction of visual, atmospheric, or audible elements that diminish the integrity of the significant historic features or traditional uses of a TCR/PTRCI (36 C.F.R. 800.5[a][2][v]); result in the neglect or deterioration of TCR/PTRCI (36 C.F.R. 800.5[a][2][vi]); and would not include transfer, lease, or sale of property out of federal or Yuba Water ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the TCR's/PTRCI's historic and/or traditional religious and cultural importance and integrity of association. Impacts under the No Project Alternative are considered **less than significant.**

14.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to

be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). Only those projects that could affect TCRs are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to regional water supply operations, or water-related and water dependent resources that also could be affected by the Proposed Projects or alternatives (see Chapter 4). For this reason, only the limited numbers of projects with the potential to cumulatively impact TCRs are specifically considered qualitatively in the cumulative impacts analysis:

- FERC Hydropower Projects in the Yuba River Watershed
    - *Yuba-Bear Hydroelectric Project (Yuba-Bear Project) FERC Project No. 2266 Relicensing, Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310) and the Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing*
    - *Oroville Facilities Hydroelectric Project FERC Relicensing (FERC Project No. 2100)*
    - *South Feather Power Project FERC Relicensing (FERC Project No. 2088)*
- Water Storage and Conveyance Projects
    - *Sites Reservoir Project*
    - *Delta Conveyance Project*
    - *ARC Spillway Project*
    - *USACE NBB Dam and Reservoir Water Control Manual (WCM) Update*
    - *WWD In-Lieu Recharge Project*
    - *Healthy Rivers and Landscapes (HR&L) Program*
- Water Transfer and Acquisition Programs
    - *Lower Yuba River Accord Water Transfer Program Extension*
    - *Long-term and Short-term Water Transfers*
    - *Cordua Groundwater Monitoring Well*
    - *WWD In-Lieu Recharge Project*
- Flood Control Projects
    - *500-Year Flood Protection Project*
    - *Yuba River North Training Wall (NTW) Project*
- Ecosystem Restoration and Fisheries Improvement Projects
    - *Yuba Foothills Healthy Forest Project*
    - *North Yuba Forest Partnership*

    - Upper Yuba Headwaters Forest Restoration Project
    - *`Inimim Forest Restoration Project*
    - *Yuba River Resilience Initiative*
    - *Hallowood Side Channel and Floodplain Restoration Project*
    - *Yuba River Canyon Salmon Habitat Restoration Project*
    - *Timbuctoo Acquisition and Restoration Project*
    - *Upper Long Bar Habitat Restoration Project*
    - *Lower Long Bar Restoration Project*
    - *Upper Rose Bar Habitat Restoration Project*
    - *Hallwood/Cordua Canal – Fish Screen Return Line Replacement*
    - *South Canal Diversion Water Supply and Fish Passage Enhancement Annual Maintenance Project*
- Other Local Projects in the Yuba Region
    - *Yuba City Boat Ramp Sediment Removal Project*

These projects are described in Chapter 4 and qualitatively addressed below.

CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (C.C.R. 14, § 15355). To date, there is very little formal California State guidance and no formal standards on how to effectively account for or adequately consider TCRs and significant adverse impacts to them, including those that may be cumulative in nature, as part of the CEQA review process.

The resource category TCR is essentially the CEQA equivalent of what are termed "properties of traditional religious and cultural importance" (PTRCIs) at the federal level under the NHPA (36 C.F.R. Section 800.16[l]), and "traditional cultural properties" (TCPs) in applicable NHPA guidance of *National Register Bulletin 38, National Register Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Bulletin 38; Parker and King 1998) (see also C.C.R. Title 14, 4852). Section 106 of the NHPA provides a helpful framework at 36 C.F.R. 800.5 for assessing adverse effects on TCRs. The CEQ also provides helpful guidance, noting that:

> Analyzing cumulative effects is more challenging [than direct or indirect adverse effects], primarily because of the difficulty of defining the geographic (spatial) and time (temporal) boundaries. For example, if the boundaries are defined too broadly, the analysis becomes unwieldy; if they are defined too narrowly, significant issues may be missed, and decision makers will be incompletely informed about the consequences of their actions [CEQA 1997:v].

Important to consider, and as the ACHP underscores in considerations and assessments of such effects to PTRCIs/TCPs/TCRs:

> There are very different views [between Federal agencies and Native American tribes] on the treatment of effects to traditional cultural landscapes. Non-native people tend to think in a linear fashion while native peoples tend to think cyclically. This difference in world view affects not only whether or not the significance of sacred places is understood but also how such places should be treated. These places are part of living communities and are their actual history [ACHP 2011:2].

In the Cumulative Impact Assessment below, Criteria outlined at 36 C.F.R. 800.5 *et seq.* serves as a baseline to assess potential cumulative impacts to known TCRs associated with the Project area. Because affiliated tribes have unique and special expertise to identify and assess effects on and impacts to places and landscapes important to their histories, living practices, and identities, government-to-government consultation on these matters is required with each affiliated tribe to include best available science, adequate information, and to achieve good faith compliance for CEQA review inclusive of its AB 52 additions.

14.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

YRDP Cumulative Impact TCR-PP-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

This section describes the Cumulative Impact Analysis of the Proposed Projects Alternative on TCRs compared to the Existing Condition. This section describes impacts to areas upstream of Englebright Dam only; there are no impacts to TCRs in the Lower Yuba River by either YRDP or Narrows.

As noted above, assessments of adverse effects potentially resulting from Proposed Project actions and activities are evaluated according to the adverse effects criteria at 36 C.F.R. 800.5(a)(2)(i-vii)), with appropriate modifications for known cultural relationships, knowledges, and contexts of affiliated tribes. In combination with impacts from the cumulative projects identified above, cumulatively significant adverse affects and significant environmental impacts from the Proposed Project may occur under criteria 36 C.F.R. 800.5(a)(2)(i, iii, iv, and/or v) if archaeological evaluations, assessments of integrity, and treatments of consulting tribes' ancestral heritage places and resources occur without the direct oversight, approval, and guidance of consulting tribes. Western trained archaeologists often treat Native ancestral materials through constructs of gridded space and outlines of discrete locations. This likely will not, or knowingly does not, make sense for tribal relationships and understandings to their ancestral and traditional cultural land/waterscapes. Destruction associated with other identified projects, such as what is known about the Sites Reservoir Project, will have potential cumulative impacts on a known CRHR- and NRHP-eligible multi-tribal TCR/PTRCI defined cultural landscape and historic district. Further, for at least one affiliated tribe, historical and ongoing tribal uses of Bay-Delta waters as an interconnected system and CRHR- and NRHP-eligible multi-tribal TCR/PTRCI defined cultural landscape and historic district will be cumulatively impacted by "the loss of native riparian vegetation, degraded water quality, and proliferation of harmful algal blooms [that would] interfere[] with tribal members' ability to carry out traditional ceremonial practices, gather riparian vegetation for cultural implements, carry out traditional fishing practices, and practice and pass on

traditional ecological knowledge" (SWRCB 2022:41). UAIC, a consulting tribe, states that "Tribal values focus on restoring the integrity of the historical resource, leading to the preferred outcome of restoration. Often this means reestablishing the integrity of materials, location, and setting by recovering and then reburying the physical components of sites, inclusive of and especially site soils" (UAIC 2023:10).

It is necessary to note that it is the position of UAIC, a consulting and affiliated California Native American tribe, that "the end goal is to avoid adverse effects to Tribal resources. If adverse effects must occur, then a process of restoration can ameliorate the effects but not entirely resolve them. Outcomes following evaluations should always encompass discussions of restoration, potentially as part of mitigation (UAIC 2023:10). The Proposed Projects would not result in any unmitigated significant impacts related to TCRs and with implementation of the revised HPMP, would minimize cumulative impacts under 36 C.F.R. 800.5(a)(2)(i, iii, iv, and/or v) and potentially enhance stewardship and restore integrity of TCRs through the cumulative condition. No cumulative adverse effects are anticipated under criterion 36 C.F.R. 800.5(a)(2)(ii, vi, or vii).

When considered cumulatively with regional projects and respective impacts to TCRs, the Proposed Projects Cumulative Condition would be less than significant. Therefore, the Proposed YRDP Project would have a **less than significant cumulative impact** to TCRs.

14.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

YRDP Cumulative Impact TCR-Alt1-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

Cumulative Conditions under Alternative 1 are the same as those identified above for the Cumulative Proposed Project (see Section 14.6.1) with additional possible decreases or increases to recreational wave action. Cumulative effects of Alternative 1 may cause a substantial adverse change in significance of TCRs CA-YUB-1728; CA-YUB-1761; CA-YUB-1763; CA-YUB-1764/H; and CA-YUB-1767 (PRC § 21048.3(b)) according to the adverse effects criteria at 36 C.F.R. 800.5(a)(2)(i, iii, iv, and v). No cumulative adverse effects are anticipated under criterion 36 C.F.R. 800.5(a)(2)(ii, vi, or vii). Alternative 1 would include implementation of the revised HPMP and would minimize cumulative impacts under 36 C.F.R. 800.5(a)(2)(i, iii, iv, and v) and potentially enhance stewardship and restore integrity of TCRs through the cumulative condition.

When considered cumulatively with regional projects and respective impacts to TCRs, the Alternative 1 Cumulative Condition would be less than significant. Therefore, the YRDP under Alternative 1 would have a **less than significant cumulative impact** to TCRs.

14.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

YRDP Cumulative Impact TCR-Alt2-1: Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources

Under Alternative 2, construction and ground-disturbing activities would be the same as those identified above for the Cumulative Proposed Project (see Section 14.6.1). Alternative 2 hydrological operational changes are not anticipated to impact any TCR beyond that described in *YRDP Impact TCR-PP-1*. When considered cumulatively with regional projects and respective impacts to TCRs, the Alternative 2 Cumulative Condition would be less than significant. Therefore, the YRDP under Alternative 1 would have a **less than significant cumulative impact** to TCRs.

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CHAPTER 15

AIR QUALITY AND GREENHOUSE GAS EMISSIONS

15.1 Introduction

This section describes the environmental and regulatory setting, methodology, assumptions, and individual and cumulative impacts to air quality and greenhouse gas (GHG) emissions for the Proposed Projects and Alternatives. A quantitative analysis was conducted for both construction and operational emissions of criteria air pollutants and GHGs. A qualitative analysis was conducted for toxic air contaminants (TACs). Air quality and GHG analyses are consistent with guidance from the Feather River Air Quality Management District (FRAQMD) and the Northern Sierra Air Quality Management District (NSAQMD).

15.2 Environmental Setting

15.2.1 Pollutant-Specific Overview

15.2.1.1 Criteria Air Pollutants

Pursuant to the Clean Air Act (CAA) Amendments of 1970, the United States Environmental Protection Agency (USEPA) set primary National Ambient Air Quality Standards (NAAQS) to protect public health with a margin of safety and secondary NAAQS to protect the environment including plants, forests, crops, and materials. The pollutants covered by the NAAQS include particulate matter, ozone, nitrogen oxides, sulfur oxides, carbon monoxide, and lead. The NAAQS are subject to periodic review and revision. The federal regulatory schemes also cover TACs. The CAA requires USEPA to designate areas as attainment, nonattainment, or maintenance (an area that was previously nonattainment and is currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved.

The California Ambient Air Quality Standards (CAAQS) were adopted by the California Air Resources Board to protect public health and include the same six criteria air pollutants as the NAAQS and four additional pollutants (hydrogen sulfide, sulfate, and vinyl chloride, and visibility reducing particles). There are over 200 substances or groups of substances that are classified as TACs. These substances are those air pollutants that may pose a hazard to human health and may have the potential to increase mortality or serious illness. The FRAQMD Indirect Source Review Guidelines fully describes these air pollutants, their sources, and potential health impacts (FRAQMD 2010). Table 15.2-1 above provides a summary of these pollutants and their effects on health and the environment.

Table 15.2-1. Pollutants and their effects on health and the environment.

Pollutant	Effects on Health and the Environment
Ozone (O_3)	Respiratory symptoms; worsening of lung disease leading to premature death; damage to lung tissue; crop, forest, and ecosystem damage; damage to a variety of materials including rubber, plastics, fabrics, paint, and metals
Particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$)	Premature death; hospitalization for worsening of cardiovascular disease; hospitalization for respiratory disease; asthma-related emergency room visits; increased symptoms, increased inhaler usage
Particulate matter less than 10 microns in aerodynamic diameter (PM_{10})	Premature death & hospitalization, primarily for worsening of respiratory disease; reduced visibility and material soiling
Nitrogen Oxides (NO_x)	Lung irritation; enhanced allergic responses
Carbon Monoxide (CO)	Chest pain in patients with heart disease; headache; light-headedness; reduced mental alertness
Sulfur Oxides (SO_x)	Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits
Lead	Impaired mental functioning in children; learning disabilities in children; brain and kidney damage
Hydrogen Sulfide (H_2S)	Nuisance odor (rotten egg smell); at high concentrations: headache & breathing difficulties
Sulfate	Same as $PM_{2.5}$, particularly worsening of asthma and other lung diseases; reduces visibility
Vinyl Chloride	Central nervous system effects, such as dizziness, drowsiness, & headaches; long-term exposure: liver damage & liver cancer
Visibility Reducing Particles	Reduced airport safety, scenic enjoyment, road safety, and discourages tourism
Toxic Air Contaminants	Cancer; reproductive and developmental effects; neurological effects

Source: CARB, Common Air Pollutants, https://ww2.arb.ca.gov/resources/common-air-pollutants. Accessed September 4, 2024.

15.2.1.2 Greenhouse Gases and Climate Change

Climate change is characterized by a long-term change in the average weather patterns that have come to define the Earth's local, regional and global climates, and these changes have a broad range of observed effects that are synonymous with the term (NASA 2025). Although the climate can change, and has changed, in the past in response to natural drivers, recent climate change has been more rapid than previous episodes of climate change and has been linked to increasing concentrations of greenhouse gases (GHGs) in Earth's lower atmosphere and the rapid timescale on which these gases have accumulated (IPCC 2021; 2023). The major causes of this rapid loading of GHGs into the atmosphere include the burning of fossil fuels since the beginning of the Industrial Revolution, agricultural practices, increases in livestock grazing, and deforestation (IPCC 2021).

GHGs are gases that warm the earth by trapping heat in the atmosphere. Higher concentrations of heat-trapping GHGs in the atmosphere result in increasing global surface temperatures, a phenomenon commonly referred to as global warming or climate change. Future climate change is projected to increase the severity of impacts across natural and human systems and will increase regional differences (IPCC 2023). Higher atmospheric GHG concentrations and global surface temperatures in turn result in changes to the Earth's climate system, including rainfall patterns, extreme weather events, ocean temperature and acidity, the amount of spring snow cover in the Northern Hemisphere, atmospheric water content, and global sea-level rise (IPCC 2023). With further warming, climate change risks will become increasingly complex and more difficult to manage. The geographic area of influence for GHGs is global because of global air circulation patterns and the long time horizons of the pollutants involved.

GHGs can originate from both natural and anthropogenic sources. Natural sources of GHGs include human, animal, and plant respiration, organic matter decomposition, and ocean evaporation. Anthropogenic sources include the combustion of fossil fuels, waste treatment, and agricultural processes. The most important GHGs directly emitted by humans include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. Different GHGs can have different effects on the Earth's warming. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, typically a 100-year time horizon, relative to the emission of 1 ton of CO_2. (USEPA 2025). CO_2 is the primary GHG emitted through human activity and mainly through the combustion of fossil fuels for energy and transportation. Human activities emitting CH_4 include energy production, industrial processes, agriculture, land use, and waste management. CH_4 is also emitted from a number of natural sources such as wetlands, reservoirs and ponds, termites, oceans, sediments, volcanoes, and wildfires. The GWP of CH_4 is 28 based on the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (USEPA 2025). N_2O can result from various agricultural soil management activities including fertilizing plants as well as combustion of fuels and wastewater treatment. Fluorinated gases come almost entirely from human-related sources and have been used in refrigerants, semiconductor manufacturing, and other industrial processes. Fluorinated gases typically have large GWPs and long atmospheric lifetimes. The GWP of N_2O is 265 based on IPCC's Fifth Assessment Report (USEPA 2025). Gases with a higher GWP absorb more energy, per ton emitted, than gases with a lower GWP, and thus contribute more to warming Earth. Representing GHG emissions in terms of CO_2e allows for different GHGs to be combined relative to their warming potential.

This chapter describes the Proposed Projects' contributions to climate change through the emissions of greenhouse gases while Chapter 25 considers operations of the Proposed Projects under future climate change conditions.

15.2.2 Geography

YRDP is located within both Yuba County and Sierra County, while the Narrows Project is located in both Yuba and Nevada Counties. New Bullards Bar Reservoir and the majority of the Proposed Projects' elements are in Yuba County. Part of the Lohman Ridge Diversion Tunnel and Our House Diversion Dam facilities are located in Sierra County.

Northern Sacramento Valley Air Basin

The Northern Sacramento Valley Air Basin (NSVAB) includes Yuba, Butte, Colusa, Glenn, Shasta, Sutter, and Tehama counties. The FRAQMD serves both Yuba County and Sutter County and has two air quality monitoring stations. The monitoring station in Yuba City is representative of the air quality levels in the Yuba City-Marysville area, while the other monitoring station is located on top of the South Butte in the Sutter Buttes, approximately 2,000 feet above the valley floor. The Sutter Buttes monitoring station is specifically used to record transport ozone from populated areas into the Northern Sacramento Valley (SVAQEEP 2018).

Mountain Counties Air Basin

The Mountain Counties Air Basin (MCAB) includes Sierra, Nevada Plumas, Placer, El Dorado, Amador, Mariposa, Calaveras, and Tuolumne counties. The NSAQMD serves Nevada, Sierra, and Plumas counties and has five active air quality monitoring stations. The nearest NSAQMD monitoring station to the Project Area is the Grass Valley-Litton Building monitoring station (California Air Resources Board [CARB] Site Number 29800). Figure 15.2-1, shows the basin and district boundaries in the Proposed Projects Vicinity.

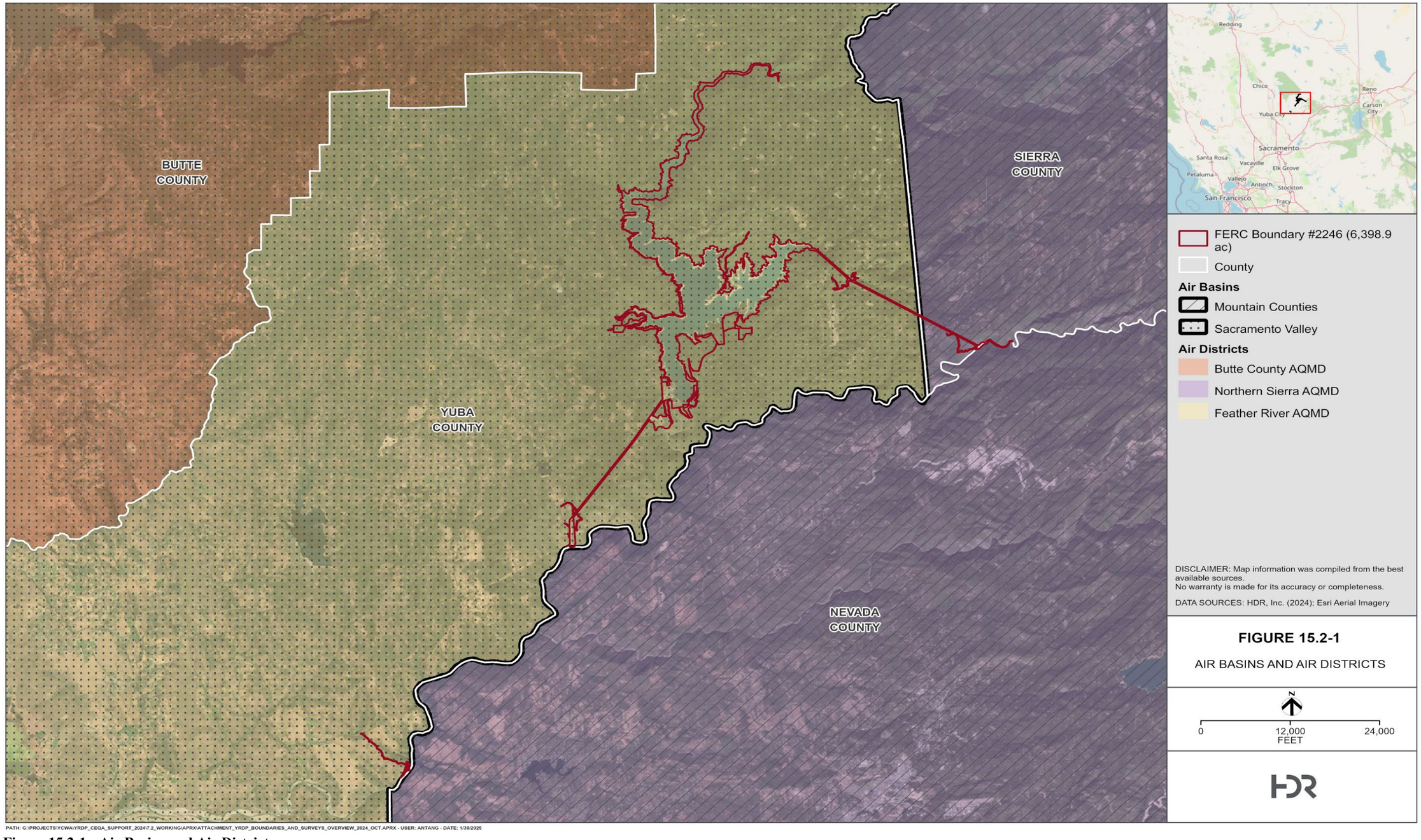

Figure 15.2-1. Air Basins and Air Districts.

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15.2.3 Regional Climate

Northern Sacramento Valley Air Basin

The Northern Sacramento Valley Planning Area (NSVPA) includes Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba counties. The NSVAB is synonymous with the NSVPA. These counties comprise the northern portion of the Sacramento Valley and are bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6,000 feet above mean sea level (msl), with individual peaks rising much higher. The mountains provide a substantial barrier to both locally created pollution and the pollution that has been transported northward on prevailing winds from the Broader Sacramento Area. The NSVAB is shaped like an elongated bowl. Temperature inversion layers can act as a lid on the bowl, allowing air pollution to rise to unhealthy levels (SVAQEEP 2018). In particular, inversion layers can lead to high levels of air pollutants such as ozone, as ozone and its precursors are not allowed to disperse and will react with greater frequency, leading to higher ozone concentrations.

Mountain Counties Air Basin

The MCAB lies along the northern Sierra Nevada mountain range near the Nevada border. The climate of the MCAB is quite variable depending on location as the climate varies by elevation in the foothills and mountains. The Sierra Nevada Range and high mountain elevations experience large amounts of precipitation and cold winter temperatures while foothill areas are typically warmer with less precipitation. Like the NSVAB, the MCAB has temperature inversions that can lead to high ozone, as well as ozone transport from the Bay Area and from the Sacramento and San Joaquin Valleys from upwind valley air flow.

15.2.4 Temperature and Precipitation

California's Fourth Climate Change Assessment uses two RCPs from the Fifth IPCC Assessment Report on Climate Change. The RCP 4.5 medium emissions scenario is a mitigation scenario where GHG emissions peak by 2040 and then decline. The RCP 8.5 high emissions scenario is a no-mitigation scenario where GHG emissions continue to rise throughout the 21st century.

At New Bullards Bar Reservoir (12571 Marysville Rd, Camptonville, CA 95922), where much of the Proposed Projects activity would occur, the baseline temperature from 1961-1990 was on average 69.3 degrees Fahrenheit with 5 extreme heat days per year. By mid-century (2035-2064), it is anticipated that temperatures would increase to 71.5 – 74.9 degrees Fahrenheit with 13 - 43 extreme heat days per year in the medium emissions scenario (RCP 4.5) or 71.9 – 75.4 degrees Fahrenheit with 12 - 49 extreme heat days per year in the high emissions scenario (RCP 8.5). By end-century (2070-2099), it is anticipated that temperatures would increase to 71.9 – 76.2 degrees Fahrenheit with 17 – 62 extreme heat days per year in the medium emissions scenario (RCP 4.5) or 74.5 – 80.1 degrees Fahrenheit with 35 – 87 extreme heat days per year in the high emissions scenario (RCP 8.5).

Precipitation in California as a whole is not expected to change significantly in the next 50-75 years. However, precipitation will likely occur in the form of more intense storms and a shorter wet season (Cal-Adapt 2023).

15.2.5 Regional Attainment Status

The CAA requires the USEPA to designate areas within the country as either "attainment" or "nonattainment" for each criteria pollutant based on whether the NAAQS have been achieved. Similarly, the California Clean Air Act (CCAA) requires the California Air Resources Board (CARB) to designate areas within California as either "attainment" or "nonattainment" for each criteria pollutant based on whether the CAAQS have been achieved. If a pollutant concentration is lower than the standard, the area is classified as "attainment" for that pollutant. If a pollutant exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable". The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards.

Table 15.2-2, Table 15.2-3, and Table 15.2-4 depict the current attainment status of Yuba, Sierra, and Nevada Counties, respectively, for each criteria air pollutant with respect to the NAAQS and CAAQS.

Table 15.2-2. Yuba County Attainment Status.

Criteria Air Pollutant	Designation	
	Federal Standards	**State Standards**
O_3 (8-hour)	Unclassified/Attainment	Nonattainment
PM_{10}	Unclassified/Attainment	Nonattainment
$PM_{2.5}$	Attainment*	Attainment
CO	Unclassified/Attainment	Unclassified
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
Pb	Unclassified/Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

*A portion of Yuba County (Yuba City-Marysville) is in Maintenance-Moderate for the PM2.5 federal 2006 standard. The Project Area is outside that portion of Yuba County.
Source: CARB, Ambient Air Quality Standards Designation Tool, https://ww2.arb.ca.gov/aaqs-designation-tool, accessed September 11, 2024. CARB, Maps of State and Federal Area Designations, https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations, accessed September 11, 2024.

Table 15.2-3. Sierra County Attainment Status.

Criteria Air Pollutant	Designation	
	Federal Standards	State Standards
O_3 (8-hour)	Unclassified/Attainment	Unclassified
PM_{10}	Unclassified/Attainment	Nonattainment
$PM_{2.5}$	Unclassified/Attainment	Unclassified
CO	Unclassified/Attainment	Unclassified
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
Pb	Unclassified/Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

Source: CARB, Ambient Air Quality Standards Designation Tool, https://ww2.arb.ca.gov/aaqs-designation-tool, accessed October 24, 2023; CARB, Maps of State and Federal Area Designations, https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations, accessed October 24, 2023.

Table 15.2-4. Nevada County Attainment Status.

Criteria Air Pollutant	Designation	
	Federal Standards	State Standards
O_3 (8-hour)	Nonattainment (western part of Nevada County)	Nonattainment
PM_{10}	Unclassified/Attainment	Nonattainment
$PM_{2.5}$	Unclassified/Attainment	Unclassified
CO	Unclassified/Attainment	Unclassified
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
Pb	Unclassified/Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

Source: CARB, Ambient Air Quality Standards Designation Tool, https://ww2.arb.ca.gov/aaqs-designation-tool, accessed October 29, 2024; CARB, Maps of State and Federal Area Designations, https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations, accessed October 29, 2024.

15.2.6 Local Ambient Air Quality

FRAQMD and NSAQMD maintain and operate a network of ambient air monitoring stations throughout the Project Area. Due to the remoteness of the Proposed Projects, there are not many monitoring stations near the Project Area. The purpose of the monitoring stations is to measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS.

The air quality monitoring station closest to the Project Area is the Grass Valley-Litton Building monitoring station, located approximately 9.8 miles to the south. The Grass Valley-Litton Building monitoring station is operated by the NSAQMD in Nevada County and is within the Mountain Counties Air Basin. The Grass Valley-Litton Building monitoring station monitors O_3 and $PM_{2.5}$. The next nearest station that monitors PM_{10} and NO_2 is the Yuba City-Almond Street monitoring station, which is located approximately 19.2 miles southwest of the Narrows 2 portion of the boundary and 26.4 miles from the main part of the project site. The Yuba City-Almond Street monitoring station is operated by CARB in Sutter County and is within the NSVAB. Table 15.2-5 presents the most recent ambient air quality data at the Grass Valley and Yuba City monitoring stations from 2019 to 2023.

Table 15.2-5. Ambient Air Quality Monitoring Data near the Proposed Projects.

Pollutant Standards[1]	Year				
	2019	2020	2021	2022	2023
O_3- Grass Valley- Litton Building					
Maximum 1-hour concentration (ppm)	0.085	0.128	0.102	0.090	0.143
Maximum 8-hour concentration (ppm)	0.077	0.123	0.97	0.079	0.82
Number of days standard exceeded	--	--	--	--	--
CAAQS 1-hour (>0.09 ppm)	0	2	6	0	2
CAAQS 8-hour (>0.07 ppm)	5	20	40	16	13
O_3- Grass Valley- Litton Building					
NAAQS 8-hour (>0.07 ppm)	5	16	38	12	10
PM_{10}- Yuba City-Almond Street					
National maximum 24-hour concentration (µg/m^3)	80.5	269.1	110.1	72.9	59.0
State maximum 24-hour concentration (µg/m^3)	81.9	269.2	109.6	73.4	59.2
National annual average concentration (µg/m^3)	22.5	28.1	20.6	21.6	20.9
State annual average concentration (µg/m^3)	23.3	28.0	*	22.2	*
Number of days standard exceeded	--	--	--	--	--
NAAQS 24-hour (>150 µg/m^3)	0	4	0	0	0
CAAQS 24-hour (>50 µg/m^3)	27	39	11	9	7
$PM_{2.5}$- Grass Valley- Litton Building					
National maximum 24-hour concentration (µg/m^3)	16.8	202.2	176.4	218.2	17.7
State maximum 24-hour concentration (µg/m^3)	16.8	202.2	176.4	218.2	17.7
National annual average concentration (µg/m^3)	6.2	14.1	8.7	5.9	4.7
State annual average concentration (µg/m^3)	6.3	*	8.7	6.0	4.7
Number of days standard exceeded	--	--	--	--	--
NAAQS 24-hour (>35 µg/m^3)	0	27	16	7	0
NO_2- Yuba City-Almond Street					
Maximum 1-hour concentration (ppb)	45.2	46.2	47.0	50.1	38.3
Annual average concentration (ppb)	6	6	5	6	5
NO_2- Yuba City-Almond Street					
Number of days standard exceeded	--	--	--	--	--
NAAQS 1-hour (>100 ppb)	0	0	0	0	0
CAAQS 1-hour (>180 ppb)	0	0	0	0	0

Source: CARB 2024a

Notes: O_3 = ozone; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 2.5 micrometers and smaller; NO_2 = nitrogen dioxide; ppm = parts per million; µg/m^3 = micrograms per cubic meter; ppb = parts per billion; NAAQS = national ambient air quality standards; CAAQS = California Ambient air quality standards; * = insufficient data available to determine the value.

[1] CO data is not available on CARB's website.

15.2.7 Sensitive Receptors

CARB defines sensitive receptors as children, elderly, asthmatics and others whose are at a heightened risk of negative health outcomes due to exposure to air pollution. The locations where

these sensitive receptors congregate are considered sensitive receptor locations. Sensitive receptor locations include hospitals, schools, residences, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes (CARB 2025a). As shown in Appendix 15A, the closest sensitive receptors to the Project site are residences within a quarter mile. The nearest school is Camptonville Elementary School in Camptonville, approximately 0.78 miles away, and the nearest day care center is Yuba Feather Preschool, approximately 2.8 miles away. The nearest hospital is Sierra Family Medical Clinic in Nevada City, approximately 3.4 miles away. A full list of sensitive receptors within a ten-mile radius is included in table format also included in Appendix 15A.

Emission of toxic air contaminants (TACs) may cause health risks to sensitive receptors. The FRAQMD Indirect Source Review Guidelines explain that toxic air contaminants (TACs) can cause long term health effects such as cancer, birth defects, neurological damage, or genetic damage, or short term acute affects such as eye watering, respiratory irritation (cough), running nose, throat pain, and headaches. Sources of TACs can come from a range of sources including power plants and households (FRAQMD 2024). In the existing condition, there are vehicles that emit TACs, but these mobile sources would be minimal and spread out in both time and space. This type of project, as a FERC relicensing project for existing hydropower energy generation, is not considered a major source of TACs.

15.2.8 Asbestos

As discussed in Chapter 17, Hazards and Hazardous Materials, the area surrounding the Project site is not designated by the California Department of Conservation (DOC) as more likely to contain asbestos. If asbestos is found and requires an asbestos demolition notification, FRAQMD requests to be courtesy-copied when the USEPA is notified.

15.3 Regulatory Setting

15.3.1 Federal

15.3.1.1 Clean Air Act and National Ambient Air Quality Standards

The CAA is the primary federal law governing air quality. The CAA is regulated by the USEPA, which sets standards for the concentration of NAAQS. The CAA requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). USEPA is responsible for implementing the programs established under the CAA, programs such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of SIPs. If a state contains areas that violate the national standards, the CAA requires the State to revise its SIP to incorporate additional control measures to reduce air pollution. The USEPA has authorized states such as California with air programs that meet or exceed federal standards to implement many of the federal programs while retaining an oversight role. The federal standards are summarized in Table 15.3-1, National and California Ambient Air Quality Standards (CAAQS).

Table 15.3-1. National and California Ambient Air Quality Standards.

Pollutant	Averaging Time	National Standards[1]		California Standards[2]
		Primary[3]	Secondary[4]	
O_3	1 hour	--	Same as Primary Standard	0.09 ppm
	8 hour	0.07 ppm		0.07 ppm
PM_{10}	24 hour	150 µg/m^3	Same as Primary Standard	50 µg/m^3
	Annual	--		20 µg/m^3
$PM_{2.5}$	24 hour	35 µg/m^3	Same as Primary Standard	--
	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3	12 µg/m^3
CO	1 hour	35 ppm	--	20 ppm
	8 hour	9 ppm	--	9 ppm
	8 hour (Lake Tahoe)	--	--	6 ppm
NO_2	1 hour	100 ppb	--	0.18 ppm
	Annual Arithmetic Mean	0.053 ppm	Same as Primary Standard	0.03 ppm
SO_2	1 hour	75 ppb	--	0.25 ppm
	3 hour	--	0.5 ppm	--
	24 hour	0.14 ppm	--	0.04 ppm
	Annual Arithmetic Mean	0.03 ppm	--	--
Pb	30-day Average	--	--	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	--	--
	Rolling 3-month Average	0.15 µg/m^3	Same as Primary Standard	--
Visibility Reducing Particles	8 hour	No National Standards		--[5]
Sulfates	24 hour	No National Standards		25 µg/m^3
Hydrogen Sulfide	1 hour	No National Standards		0.03 ppm
Vinyl Chloride	24 hour	No National Standards		0.01 ppm

Source: CARB 2016

Notes: O_3 = ozone, PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 2.5 micrometers and smaller; CO = carbon monoxide; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; Pb = lead; ppm = parts per million; µg/m^3 = micrograms per cubic meter; ppb = parts per billion

1 National standards (other than O_3, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the USEPA for further clarification and current national policies.

2 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in § 70200 of Title 17 of the California Code of Regulations.

3 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

4 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5 In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

15.3.1.2 Emission Standards for Non-Road Diesel Engines

The USEPA has adopted multiple tiers of emission standards for non-road (or off-road) diesel engines. The non-road standards cover mobile non-road diesel engines of all sizes used in a wide range of construction, agricultural and industrial equipment. The first federal standards, Tier 1, were adopted in 1994. Tier 2 standards were adopted in 2001, Tier 3 in 2006, and final Tier 4 standards in 2014. The federal emission standards for non-road diesel engines are established in advancing tiers that progressively become more stringent (i.e., the higher the tier, the lower the emissions). The Tier 4 emissions standards have more stringent NO_X, particulate matter, and hydrocarbon limits than the lower tiers. The CO emission limits for Tier 4 standards remain unchanged from the Tier 2 and Tier 3 standards.

15.3.1.3 On-Road Diesel Fuel Rule

On December 20, 2022, USEPA adopted the *Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards* (USEPA 2023a) that set stronger emissions standards to lower emissions of NO_X, CO, and $PM_{2.5}$ from heavy-duty vehicles and engines starting in model year 2027. Under this rule, NO_X emissions from heavy-duty vehicles would be reduced by 44 percent in 2040 and by 48 percent in 2045. $PM_{2.5}$ emissions from heavy-duty vehicles are estimated to decrease by 7 percent in 2040 and by 8 percent in 2045. Emissions of CO from heavy-duty vehicles are estimated to decrease by 16 percent in 2040 and by 18 percent in 2045 (USEPA 2023a).

15.3.1.4 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants are stationary source standards for hazardous air pollutants (40 C.F.R. 63). Hazardous air pollutants are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects (USEPA 2022). Examples of hazardous air pollutants include benzene, perchloroethylene, methylene chloride, dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

15.3.1.5 Endangerment Finding for Greenhouse Gases

On April 2, 2007, in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497, the U.S. Supreme Court found that GHGs are air pollutants covered by the CAA. The Supreme Court held that USEPA must determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. To regulate GHGs from passenger vehicles, the USEPA issued an endangerment finding on December 7, 2009. The finding identifies emissions of six key GHGs — CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 — that threaten the public health and welfare of current and future generations (USEPA 2023b).

15.3.1.6 Mandatory Reporting of Greenhouse Gases Rule

On September 22, 2009, the USEPA issued a final rule for the mandatory reporting of GHG data and other relevant information from large sources in the United States (Code of Federal Regulations Title 40, Part 98). This comprehensive, nationwide emissions data is intended to provide a better understanding of the sources of GHGs and guide development of policies and programs to reduce emissions. The mandatory reporting rule applies to direct GHG emitting sources; suppliers of fossil fuel, industrial gas, and other products that would result in GHG emissions if released, combusted, or oxidized; and facilities that inject carbon dioxide underground for geologic sequestration or other reasons. In general, facilities that emit 25,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) or more per year of GHGs are required to submit annual reports to the USEPA.

15.3.1.7 Corporate Average Fuel Economy Standards

The Corporate Average Fuel Economy (CAFE) standards were first introduced by Congress in 1975 to help reduce the country's dependence on foreign oil. CAFE standards are regulated by

Department of Transportation's National Highway Traffic and Safety Administration (NHTSA). NHTSA sets and enforces the CAFE standards, while the USEPA calculates average fuel economy levels for manufacturers and sets related GHG standards. The regulations have become more stringent over time. The regulations at first applied only to passenger cars in 1978, then included light duty trucks up to 6,000 pounds in 1980, and finally increased to all vehicles up to 8,500 pounds the next year. Regulations varied during the 1980s for both cars and trucks before reaching a steady target for cars in 1990 through 2010, with trucks moderately increasing during the period from 20 to 21 miles per gallon (mpg) through 2005, then reaching 23.5 mpg by 2010. From 2010 to present, fuel economy standards continued to increase for future model years.

On July 28, 2023, NHTSA announced a proposal for new CAFE standards for passenger cars and light trucks built in model years 2027-2032, and new fuel efficiency standards for heavy-duty pickup trucks and vans built in model years 2030-2035. On June 7, 2024, NHTSA announced a Final Rule for CAFE and Heavy-Duty Pickup Trucks (HDPUV). This Final Rule requires an industry-wide fleet average of approximately 50.4 miles per gallon (mpg) in MY 2031 for passenger cars and light trucks, and an industry fleet-wide average for HDPUVs of roughly 2.851 gallons per 100 miles in MY 2035. The final CAFE standards increase at a rate of 2 percent per year for passenger cars in MYs 2027-31 and 2 percent per year for light trucks in model years 2029-31. The final HDPUV fuel efficiency standards increase at a rate of 10 percent per year in MYs 2030-2032 and 8 percent per year in MYs 2033-2035. (NHTSA 2025).

15.3.2 State

15.3.2.1 California Clean Air Act and California Ambient Air Quality Standards

The CCAA, signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the state. In general, the California standards are more stringent than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The California standards are summarized in Table 15.3-1.

The CCAA is administered by CARB at the state level and by the air quality management districts and air pollution control districts (air districts) at the regional and local levels. CARB and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through air district-level air quality management plans that would be incorporated into the SIP. In California, USEPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB is responsible for establishing state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The act also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The

CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures.

Executive Orders

Executive Order S-3-05

In June 2005, Governor Schwarzenegger issued Executive Order (EO) S-3-05, which established the following GHG emissions reduction targets: 1) reduce GHG emissions to 2000 levels by 2010, 2) reduce GHG emissions to 1990 levels by 2020, and 3) reduce GHG emissions to 80 percent below 1990 levels by 2050.

Executive Order B-30-15

On April 20, 2015, Governor Brown signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. California's emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the United States to limit global warming below 2 degrees Celsius, the warming threshold at which there will likely be major climate disruptions such as super droughts and rising sea levels.

Executive Order B-55-18

EO B-55-18, signed on September 10, 2018, established a new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. The EO requires the CARB to work with relevant State agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

15.3.2.2 Legislation

Pavley regulations

In 2002, the California Legislature enacted Assembly Bill (AB) 1493, also known as the Pavley Bill, which provided the nation's first GHG standards for automobiles. AB 1493 requires CARB to develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light duty truck and other vehicles determined by CARB to be vehicles whose primary use is non-commercial personal transportation in the state." In September 2004, pursuant to this directive, the CARB approved regulations to reduce GHG emissions from new motor vehicles beginning with the 2009 model year. These regulations created the Pavley standards. In September 2009, the CARB adopted amendments to the Pavley standards to reduce GHG emissions from new motor vehicles through the 2016 model year. These regulations created the Pavley II standards.

California Global Warming Solutions Act

In September 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 required that statewide GHG emissions be

reduced to 1990 levels by 2020, consistent with the target set by EO S-3-05. California met its 2020 reduction goal in 2018.

SB 32 was signed into law on September 8, 2016. SB 32 expands upon AB 32 to reduce GHG emissions. SB 32 sets into law the mandated GHG emissions target of 40 percent below 1990 levels by 2030, as set forth in EO B-30-15.

California Climate Crisis Act

In September 2022, Governor Newsom signed into law the California Climate Crisis Act, also known as AB 1279. AB 1279 requires the state to achieve net zero GHG emissions as soon as possible, but no later than 2045, and to achieve and maintain net negative GHG emissions thereafter. The bill also requires California to reduce statewide anthropogenic GHG emissions by 85 percent compared to 1990 levels and directs the CARB to work with relevant state agencies to achieve these goals.

Air Toxics Hot Spots Information and Assessment Act and Toxic Air Contaminant Identification and Control Act California regulates TACs primarily through the Tanner Air Toxics Act of 1983 (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. In 2015, OEHHA adopted the Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments.

In August 1998, CARB identified particulate emissions from diesel-fueled engines as TACs. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs, including Diesel Particulate Matter (DPM), as appropriate. Among the programs and strategies CARB has developed to reduce diesel emissions for various sources, many are applicable to sources that are present at the Port, including off-road sources (cargo-handling equipment, locomotives, construction equipment), on-road trucks (drayage trucks), and marine vessels (harbor craft, ocean going vessels, and shore power).

California Renewables Portfolio Standards

Senate Bill (SB) 1078 and SB 107 established California's Renewables Portfolio Standard (RPS) and obligated investor-owned utilities, energy service providers, and Community Choice Aggregations by 2010 to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent is reached. The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program. SB X 1-2, called the California Renewable Energy Resources Act, obligates all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020.

SB 100, also known as the California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, was signed into law in September 2018. The bill establishes a new RPS target of 50 percent by 2026, increases the RPS target in 2030 from 50 percent to 60 percent, and establishes a goal of 100 percent zero-carbon energy sources by 2045.

Clean Energy and Pollution Reduction Act SB 350, also known as the Clean Energy and Pollution Reduction Act of 2015, was signed into law in September 2015. SB 350 extends RPS targets beyond 2020 by establishing tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030.

CEQA Guidelines Amendments

SB 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the State CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Sustainable Communities and Climate Protection Act SB 375, also known as the Sustainable Communities and Climate Protection Act, provides for a new planning process that coordinates land use planning, regional transportation plans (RTPs), and funding priorities, originally in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires RTPs to incorporate a "sustainable communities strategy" (SCS). The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. SCS measures include transportation demand management, transportation system management, and pricing. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development.

Climate Change Scoping Plans

In December 2008, the CARB adopted the *Climate Change Scoping Plan* (2008 Scoping Plan) to achieve the goals outlined in AB 32. The 2008 Scoping Plan, developed by CARB in coordination with the Climate Action Team, proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify the state's energy sources, save energy, create new jobs, and enhance public health. According to the 2008 Scoping Plan, California will implement strategies to achieve a reduction of approximately 118 million $MTCO_2e$, or approximately 22 percent from the State's projected 2020 emission level of 545 million $MTCO_2e$ under a business-as-usual scenario. This is a reduction of 47 million $MTCO_2e$, or almost 10 percent, from 2008 emissions (CARB 2008). The CARB's original 2020 projection was 596 million $MTCO_2e$, but this revised 2020 projection considered the economic downturn that occurred in 2008.

The *First Update to the Climate Change Scoping Plan* (2014 Scoping Plan) was approved by the CARB in May 2014 and built upon the 2008 Scoping Plan with new strategies and recommendations. The 2014 Scoping Plan contained the main strategies California will implement to achieve a reduction of 80 million $MTCO_2e$ emissions, or approximately 16 percent, from the state's projected 2020 emission level of 507 million $MTCO_2e$ under the business-as-usual scenario defined in the 2014 Scoping Plan (CARB 2014a). The 2014 Scoping Plan also included a

breakdown of the amount of GHG reductions CARB recommended for each emissions sector of the state's GHG inventory. Several strategies to reduce GHG emissions were included: Low Carbon Fuel Standard, Pavley Rule, Advanced Clean Cars program, Renewable Portfolio Standard, and Sustainable Communities Strategy.

In 2016, the Legislature passed SB 32, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With the passage of SB 32, the Legislature passed companion legislation AB 197, which provided additional direction for developing the Scoping Plan. The CARB adopted *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan) in November 2017. The 2017 Scoping Plan represents a second update to the scoping plan to reflect the 2030 target as codified by SB 32. According to the 2017 Scoping Plan, the 2030 target of 260 million $MTCO_2e$ requires the reduction of 129 million MTCO2e, or approximately 33.2 percent, from the state's projected 2030 business-as-usual scenario emissions level of 389 million $MTCO_2e$ (CARB 2017).

The *2022 Scoping for Achieving Carbon Neutrality* (2022 Scoping Plan) was adopted by CARB in November 2022. The 2022 Scoping Plan lays out a path for California to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon (CARB 2022).

Advanced Clean Cars Program

In January 2012, the CARB approved a new emissions control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero emission vehicles into a single packet of standards called Advanced Clean Cars. The Advanced Clean Cars Program includes the Zero Emission Vehicle Program, which is designed to achieve California's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of zero-emission vehicles, which include battery electric, fuel cell, and plug-in hybrid electric vehicles.

Truck and Bus Regulation

CARB adopted the Truck and Bus Regulation in 2008 to clean up harmful emissions from nearly all heavy-duty diesel trucks operating in California. This regulation was last amended in 2014 to provide new flexible compliance options to owners of aging diesel fleets and recognize fleet owners that have made investments to comply, while also protecting air quality (CARB 2014b).

This regulation requires heavy-duty diesel vehicles that operate in California to reduce TACs emissions from their exhaust. Diesel exhaust is responsible for 70 percent of the cancer risk from airborne toxics (CARB 2023). Therefore, by January 1, 2023, nearly all trucks and buses will be required to have 2010 or newer model year engines to reduce particulate matter (PM) and oxides of nitrogen (NOx) emissions. To help ensure that the benefits of this regulation are achieved,

starting in 2020, only vehicles compliant with this regulation will be registered by the California Department of Motor Vehicles (DMV) (CARB 2023).

As heavy-duty on-road vehicles are such a significant source of pollutants, the Truck and Bus Regulation is one of the most far-reaching and important tools to reduce smog-forming and toxic emissions and protect public health in disadvantaged communities (CARB 2023). It is a key element in CARB's Diesel Risk reduction plan and the SIP, both of which are designed to provide clean air for Californians by helping to meet state and federal health-protective standards. Starting January 1, 2020, SB 1 only allows vehicles compliant with this regulation to be registered by the DMV (CARB 2023).

In-Use Off-Road Diesel-Fueled Fleets Regulation

The In-Use Off-Road Diesel-Fueled Fleets Regulation is intended to reduce PM and NOx for existing off-road heavy-duty diesel vehicles operating in California. First approved by the California Air Resources Board in 2007, this regulation was amended twice in 2009, once in 2010, and most recently in 2022. The 2022 Amendments, which took effect October 1, 2023, phase out the oldest and highest-emitting off-road engines and restricts the addition of vehicle-engine tier according to fleet size. For all fleet sizes, newer engines added to a fleet must meet Tier 3 standards as of 2024. This regulation also mandates the use of R99 or R1000 Renewable Diesel for all fleets with limited exceptions. (CARB 2025b).

Commercial Harbor Craft Regulation

The California Air Resources Board first adopted the Commercial Harbor Craft Regulation in 2008 and amended it in 2010. Commercial harbor craft is defined as crew and supply boats, fishing vessels, ferries, excursion vessels, tug boats, barges, dredges, and other vessel types. The most recent amendments, Resolution 22-6, were approved on March 24, 2022 and were effective as of January 1, 2023. These amendments require all commercial harbor craft to use renewable diesel fuel, have a unique vessel identifier, pay annual compliance fees by fleet size, and report their annual operations to CARB. These amendments additionally mandated the formation of a Technical Working Group to assess the commercial availability of lower-emitting combustion engines and zero-emission technology for harbor craft and report back to the Board by December 31, 2024 and every two years thereafter through December 31, 2032. (CARB 2024b).

Asbestos Airborne Toxic Control Measure for Surfacing Applications (C.C.R. Title 17, Section 93106)

This regulation prohibits the use of material containing 0.25 percent asbestos or greater for surfacing of trails, playgrounds, pedestrian areas, roads, road shoulders, alleys, lanes, driveways, parking lots, squares, plaza, and fairgrounds.

15.3.3 Regional

15.3.3.1 Feather River Air Quality Management District

The FRAQMD attains and maintains air quality conditions in Yuba County through a comprehensive program of planning, regulation, enforcement, and promotion of the understanding

of air quality issues. FRAQMD develops air quality plans that address federal and state requirements. The air quality plans include strategies and tactics to be used to attain and maintain acceptable air quality in Yuba County. FRQMD is also responsible for monitoring air pollution and adopting rules and regulations. The rules and regulations include procedures and requirements to control the emission of pollutants and prevent significant adverse impacts.

Air Quality Attainment Plan

The *Northern Sacramento Valley Planning Area 2018 Triennial Air Quality Attainment Plan* (2018 Air Quality Attainment Plan) (Sacramento Valley Air Quality Engineering and Enforcement Professionals 2018) is the latest air quality attainment plan applicable to Yuba County. The FRAQMD, along with other air districts in northern Sacramento Valley, prepared the 2018 Air Quality Attainment Plan to build on the previous 2015 triennial air quality attainment plan. The 2018 Air Quality Attainment Plan intended to comply with the requirements of the CCAA related to bringing the NSVAB into compliance with CAAQS for O_3. The 2018 Air Quality Attainment Plan includes an assessment of progress towards achieving the control measure commitments in the previous triennial plan; a summary of the last three years of O_3 data; a comparison of the expected versus actual emission reductions for each measure committed to in the previous triennial plan; updated control measure commitments; and updated growth rates of population, industry, and vehicle related emissions.

Rules and Regulations

FRQMD's regulations focus primarily on stationary sources, indirect sources, and control measures to minimize air pollutants within its jurisdiction. FRAQMD has also established rules to prevent, reduce, or mitigate fugitive dust emissions. The following FRAQMD rules are applicable to the Proposed Projects:

- **Rule 3.0 Visible Emissions**: A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour which is as dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the U.S. Bureau of Mines.
- **Rule 3.2 Particulate Matter Concentration**: A person shall not discharge into the atmosphere from any source particulate matter in excess of 0.3 grain per cubic foot of gas at standard conditions.
- **Rule 3.3 Dust and Fumes**: A person shall not discharge in any one hour from any source, dust or fumes that would exceed the amounts shown in Rule 3.3 Allowable Rate of Emission Based on Process Weight Rate table.
- **Rule 3.15 Architectural Coatings**: The purpose of this rule is to limit the quantity of Volatile Organic Compounds (VOCs) in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the air district.
- **Rule 3.16 Fugitive Dust Emissions**: A person shall take every reasonable precaution not to cause or allow the emissions of fugitive dust from being airborne beyond the property line, from which the emission originates, from any construction, handling or storage

activity, or any wrecking, excavation, grading, clearing of land or solid waste disposal operation.

- **Rule 4.1 Permit Requirements**: Any person operating an article, machine, equipment, or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain a written permit from the Air Pollution Control Officer. Stationary sources subject to the requirements of Rule 10.3, Federal Operating Permit Program, must also obtain a Title V permit pursuant to the requirements and procedures of that rule.

FRAQMD has no regulations relative to GHG emissions for residential, commercial, or industrial projects. However, the FRAQMD Indirect Source Review Guidelines provide recommendations for resources that should be used to evaluate GHG emissions (FRAQMD 2010).

15.3.3.2 Northern Sierra Air Quality Management District

The NSAQMD is responsible for preserving air quality and protecting public health and welfare in Sierra County. NSAQMD develops air quality plans to achieve and maintain the federal and state ambient air quality standards. NSAQMD develops and enforces rules and regulations that reduce air pollution and protect public health.

Rules and Regulations

The following NSAQMD rules are applicable to the Proposed Projects:

- **Regulation II, Rule 202 Visible Emissions**: A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:
  - As dark or darker in shade as that designated as No. 1 on the Ringlemann Chart, as published by the United States Bureau of Mines, or
  - Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a) of this section.
- **Regulation II, Rule 205 Nuisance**: A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons, or to the public, or which endanger the comfort, repose, health or safety of any such persons, or the public, or which cause to have a natural tendency to cause injury or damage to business or property.
- **Regulation II, Rule 207 Particulate Matter**: A person shall not release or discharge into the atmosphere from any source or single processing unit, exclusive of sources emitting combustion contaminants only, particulate matter emissions in excess of 0.1 grains per cubic foot of dry exhaust gas at standard conditions.
- **Regulation II, Rule 226 Dust Control**: Any person shall take all reasonable precautions to prevent dust emissions. Reasonable precautions may include, but are not limited to, cessation of operations, cleanup, sweeping, sprinkling, compacting, enclosure, chemical or

asphalt sealing, and use of wind screens or snow fences. For projects that disturb more than one acre of natural surface area, a dust control plan is required.

15.3.3.3 Tahoe National Forest Burning Regulations

The Tahoe National Forest is located in the northern Sierra Nevada and extends from the foothills across the Sierra crest to the California-Nevada state line. The Tahoe National Forest manages information regarding alerts, fire danger status, fire restrictions, current conditions, camping restrictions, recreation, and permits. A California Campfire Permit is required to build a campfire or use a stove outside of a developed recreation site. During fire restrictions, wood and charcoal fires are never permitted outside designated developed picnic areas or campgrounds on the Tahoe National Forest. For the Forest Service, current fire restrictions and guidelines are posted online through Forest Orders (Tahoe National Forest - Alerts & Closures).

15.3.4 Local

15.3.4.1 Yuba County 2030 General Plan

The Public Health and Safety Element of the *Yuba County 2030 General Plan* (Yuba County 2011) includes the following goals and policies related to air quality and GHG emissions that are relevant to the Proposed Projects:

- **Goal HS5**: Provide greenhouse gas efficient development patterns and successfully adapt to future changes in Yuba County's climate.
    - **Policy HS5.1**: The County will guide land use change, direct investments, and apply its fees and programs to encourage more GHG-efficient development patterns, as feasible.
    - **Policy HS5.3**: Since transportation is the large sector contributing to GHG emissions both locally and at the Statewide level, the County will prioritize land use/transportation projects that manage travel demand by increasing housing/employment density, placing home in closer proximity with destinations, increasing accessibility to transit, or otherwise decreasing vehicle miles traveled (VMT) (per household, per capita, and/or per employee).
    - **Policy HS5.4**: The County will use an efficiency-based threshold (net emissions per-capita + employee) to evaluate proposed urban land uses, such as homes, retail, office, and other uses where the location, density, and mix of use in the project area is important to the level of GHG generation.
    - **Policy HS5.7**: The County will work collaboratively with State agencies and public/private utility providers charged with regulated building efficiency, mobile-source emissions controls, energy sources and uses, and other components of GHG emissions to create opportunity for more GHG-efficient local developments.
    - **Action HS5.1 Greenhouse Gas Reduction Plan**: The County will prepare and adopt a Greenhouse Gas Reduction Plan to reduce GHG emissions. The County will choose a GHG reduction target for countywide emissions (existing and new growth) consistent

with state and regional regulations and plans including AB32 and SB375. A carbon offset program may be developed to help meet these GHG reduction targets.

- **Goal HS6 Construction Emissions**: Use construction practices and operational strategies that minimize air pollution.
    - **Policy HS6.1**: New developments shall implement emissions control measures recommended by the Feather River Air Quality Management District for construction, grading, excavation, and demolition, to the maximum extent possible.

15.3.4.2 2012 Sierra County General Plan

The Air Quality Element of the *2012 Sierra County General Plan* (Sierra County 2017) includes the following goals and policies related to air quality that are relevant to the Proposed Projects:

- Goal 1: Maintain and protect high standards of air quality.
- As a majority of Sierra County is under the jurisdiction of the Tahoe National Forest, Plumas National Forest, and Toiyabe National Forest, the management of these forests is relevant to the air quality of Sierra County.
    - Tahoe National Forest Land and Resource Management Plan: The Tahoe National Forest manages all prescribed fire operations that have the potential to degrade air quality. The Tahoe National Forest uses dust abatement to minimize dust from road use and manages smoke from prescribed fires.
    - Plumas National Forest Land and Resource Management Plan: Prescribed burning operations are timed to minimize smoke in sensitive areas. Dust abatement is used on heavily travelled roads and near recreational developments and residential areas.
    - Toiyabe National Forest Land and Resource Management Plan: The Toiyabe National Forest will cooperate with air quality regulatory agencies to prevent the deterioration of air quality that may affect vegetation, wildlife, soil, water and visual quality within the Class I Area (Hoover Wilderness).

The Sierra County General Plan is currently in the process of being updated.

15.3.4.3 2016 Sierra County Energy Action Plan

The Sierra County Energy Action Plan was adopted by the Board of Supervisors in 2016 (Sierra County 2016). This plan provides the roadmap for energy efficiency, renewable energy, and reducing water waste for better climate resilience. The five main goals are stated below:

- Goal 1: Increase Efficiency in Existing Structures
- Goal 2: Increase Performance of New Construction
- Goal 3: Increase Local Generation and Use from Renewables
- Goal 4: Increase Efficiency in Municipal Structures and Operations
- Goal 5: Reduce Water Waste and Associated Energy Use

15.3.4.4 Nevada County General Plan

The Air Quality Element of the Nevada County General Plan has not been updated since the original approval of the Nevada County General Plan by the Board of Supervisors in 1996 (Nevada County 1995). Other elements of the plan have been updated more recently. The following goals and objectives are stated below:

- Goal 14.1 Attain, maintain and ensure high air quality.
  - Objective 14.1 Establish land use patterns that minimize impacts on air quality.
  - Objective 14.2 Implement standards that minimize impacts on and/or restore air quality.
  - Objective 14.3 Identify regional impacts and coordinate with other agencies to achieve attainment.

15.3.4.5 Nevada County Energy Action Plan

The Nevada County Energy Action Plan was published in 2019 (Nevada County 2019). The Energy Action Plan provides a road map for accelerating energy efficiency, water efficiency, and renewable energy efforts already underway in Nevada County. It also provides an inventory of the energy use within the unincorporated portions of the county, for both residential and non-residential, and County operated facilities for the 2005 baseline year and the 2035 "business as usual" forecast. The Energy Action Plan then sets goals for both energy and water-energy savings and provides resources to save utility customers money, energy, and water. The goal of the plan is to reduce the projected annual grid supplied electricity use in 2035 by 51 percent and annual natural gas use by 30 percent.

15.4 Impact Assessment Methodology

15.4.1 Construction

Construction activities associated with the Proposed Projects would occur over the course of the next 20 years. While certain activities like New Colgate TDS would occur shortly after relicensing, construction of the various recreation facilities would be spread out over the next 20 years. An estimated construction schedule used in the air quality and GHG analyses is included in Appendix 15B.

To simplify the emissions analyses of multiple recreational facilities, each recreational facility was categorized into a group according to the anticipated level of construction. Facilities requiring minimal improvements were classified as "Improvements" while facilities requiring a total redevelopment or extensive new construction were classified as a "Major Rehabilitation". The third category, assigned to Cottage Creek Boat Launch and Dark Day Boat Launch, was "Major Boat Launch" because of its unique size, design, and ground disturbance. Other facilities used different classifications including; the New Colgate Powerhouse Trailwater Depression System, Log Cabin Diversion Dam Fish Release Outlet, Lohman Ridge Tunnel, and Our House Diversion Dam Outlet.

CalEEMod was used to calculate both the unmitigated and mitigated construction emissions using a generalized, but realistic, construction scenario for each of these categories. The New Colgate Tailwater Depression System, Modifications to Log Cabin Diversion Dam Fish Release Outlet, Modifications to Our House Diversion Dam Fish Release Outlet, and Modifications to Lohman Ridge Diversion Tunnel Intake were calculated separately in CalEEMod. Each construction activity was then aggregated by year of construction to find the maximum daily emissions. Results

were split by county (Yuba or Sierra) and air district (FRAQMD or NSAQMD) according to the geographic location of the activity.

A conservative approach was taken with construction starting as early as 2025. However, if construction commences at a later date, construction impacts would be lower than analyzed here due to use of a more energy-efficient and cleaner burning construction vehicle fleet mix, pursuant to State regulations that require vehicle fleet operators to phase-in less polluting heavy-duty equipment. As a result, should construction commence at a later date than analyzed in this analysis, air quality impacts would be lower than the impacts disclosed herein.

The Proposed Projects and Alternatives do not include sources that are typical of odors (e.g. agriculture, dairies, refineries, landfills, wastewater treatment plants). Construction would include use of heavy equipment that would result in temporary diesel emission odors, but this would be intermittent and localized. Therefore, the issue of odors would not require additional analysis and is not discussed further in the Impact Analysis.

There would be no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

15.4.2 Operations

Operational emissions from the Proposed Projects include direct impacts from vehicular emissions from increased visitation of the YRDP recreational areas around New Bullards Bar Reservoir, increased campfire emissions from the buildout of the YRDP recreational facilities/campgrounds, and implementation of various management plans, and indirect impacts from loss of hydropower generation relative to the existing condition. The Narrows Project does not currently include any recreational facilities, nor are any proposed. Accordingly, there is no analysis of impacts from Narrows Project recreational facility operations.

Visitor data from 2012 was scaled up to predict visitation in 2030, 2040, and 2050. The estimated mileage travelled to reach the Project site for both overnight and day use users was calculated from survey data of the county or country of residence of the visitors, as provided in the 2019 FEIS. Vehicular emissions were then calculated using the total vehicle miles travelled, total trips, and mobile emission factors from EMFAC2021. Other operational emissions include emissions from burning of wood at campfires. Campfire emissions were calculated using emission factors for wood fireplaces in CalEEMod, which sources emission factors from USEPA AP-42 § 1.9, Residential Fireplaces, Compilation of Air Emission Factors. Other infrastructure improvements

to the fish release outlets and the tunnel intake would not directly cause emissions during operation. See Appendix 15C for the visitor data and operational emissions calculations.

Emissions from the management plans are evaluated qualitatively, as many of the activities are continuations of current maintenance and survey activities and would not contribute to a significant number of trips.

For the changes to hydropower generation, generation values were used from Chapter 7 Power Production and Energy Generation. These values were then converted to GHG emissions using PG&E electricity emission factors to quantify the potential indirect increase in GHG emissions for the various scenarios. As Yuba Water sells power to the CAISO energy market, it would be feasible for other renewable sources to provide substitute clean power. However, it would be speculative and beyond the scope of CEQA to predict to what extent the hydropower losses would be replaced with clean energy or fossil fuel sources. Therefore, it is assumed that the PG&E electricity mix would be representative of the sources that would replace the hydropower losses. The analysis for impacts related to YRDP and Narrows Project hydropower losses is compared to the existing condition and not the future baseline even though it is a flow related impact. As shown in Appendix D, the differences between comparisons using the existing conditions and future baseline do not translate to significant differences in hydropower generation and resulting GHG emission comparisons.

For purposes of the programmatic analysis of indirect GHG impacts from YB/DS project operations under Alternative 1, changes in GHG emissions relative to the Future Baseline are discussed qualitatively, as it would be speculative to quantify the specific potential increase in GHG emissions that could occur as a result of decreased hydropower generation by those projects. To the extent that YB/DS operations under new FERC licenses would have impacts that are beyond the scope of those disclosed in this EIR or other CEQA documents, those impacts may need to be addressed through subsequent project-level CEQA review as more concrete information about those operations becomes available.

Operation of the Proposed Projects would not result in any new sources of odor. The number of campfires would likely increase, but as they are also part of the existing baseline and not a source of odor complaints from the public, it is not anticipated to cause a substantial impact to odors. Therefore, the issue of odors would not require additional analysis and is not discussed further in the Impact Analysis.

15.4.3 Health Risk Assessment

CEQA analysis typically includes a Health Risk Assessment (HRA) for sensitive receptors (e.g., residents, workers, school children) near the Project that are likely to be exposed to toxic air contaminants (TAC) emitted from Project activities. Most TAC are categorized as organic (primarily volatile) or inorganic (primarily particulate) emissions. Therefore, emissions of TAC are typically calculated by applying chemical-specific mass fractions (also called speciation profiles) to the total organic gases (TOG) or PM10 emission rates calculated for criteria pollutant emission inventories.

CARB developed speciation profiles (CARB 2021d) for a variety of sources, such as gasoline motor vehicles and construction dust, which were used with projected TOG and PM10 emission levels to determine TAC emissions for the Proposed Project and Alternatives.

While Operational TAC emissions would result for the minimal trips and associated emissions associated with the Proposed Projects and Alternatives, these emissions would decline over time due to vehicles becoming more fuel efficient. YRDP construction under the Proposed Projects and Alternatives would result in short-term emissions of TAC relative to existing conditions. Operational and short-term construction TAC emissions were analyzed to determine risk impacts to sensitive receptors nearby. Sensitive receptors include residences and locations where the elderly, children, or other groups with a greater susceptibility to adverse health effects could be located, such as schools, hospitals, convalescent homes, parks, and daycare centers.

15.4.4 Impact Indicators and Significance Criteria

Based on Appendix G of the State CEQA Guidelines, the Project would result in a potentially significant impact on air quality if it would:

- Conflict with or obstruct implementation of an applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Based on Appendix G of the State CEQA Guidelines, the Project would result in a potentially significant impact on GHG emissions if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The Project Area is in Yuba, Sierra, and Nevada Counties. Therefore, the Yuba County portion is subject to the rules and regulations of the FRAQMD while the Sierra and Nevada County portions are subject to the rules and regulations of the NSAQMD. The Indirect Source Review Guidelines were adopted by the FRAQMD Board of Directors in 2010. These guidelines provide guidance to estimate air pollutant emissions, identify significant effects with respect to CEQA and FRAQMD thresholds of significance, and select mitigation measures (FRAQMD 2010).

Table 15.4-1. FRAQMD Significance Thresholds.

Project Phase	NOx	ROG	PM10	PM2.5	GHG
Operational	25 lbs./day	25 lbs/day	80 lbs/day	Not Yet Established	Not Yet Established
Construction	25 lbs/day multiplied by the Project length, not to exceed 4.5 tons/year*	25 lbs/day multiplied by the Project length, not to exceed 4.5 tons/year*	80 lbs/day	Not Yet Established	Not Yet Established

*NOx and ROG construction emissions may be averaged over the life of the Project, but may not exceed 4.5 tons/year

The NSAQMD has developed a three-tier approach to significance levels. Projects with emissions meeting Level A Thresholds will require the most basic mitigations. Projects in the Level B Thresholds range will require more extensive mitigations and those exceeding Level C Thresholds will require the most extensive mitigations. If emissions for NOx, Reactive Organic Gas (ROG) or PM10 exceed 136 pounds per day (Level C), then there is a significant impact; Level B is significant if two or more pollutants fall into this category (NSAQMD 2024).

Table 15.4-2. Northern Sierra AQMD Significance Thresholds.

	NOx	ROG	PM10
Level A Thresholds	< 24 lbs/day	< 24 lbs/day	< 79 lbs/day
Level B Thresholds	24-136 lbs/day	24-136 lbs/day	79-136 lbs/day
Level C Thresholds	>136 lbs/day	>136 lbs/day	>136 lbs/day

Criteria air pollutant thresholds are set in alignment with the nonattainment designation and emission budget allowed in that air district's State Implementation Plan. Lower thresholds are typically set for areas designated in more severe nonattainment areas. Both FRAQMD and NSAQMD have set thresholds of significance for NOx, ROG, and PM10. As NOx and ROG are precursors for ozone and both FRAQMD and NSAQMD are in nonattainment for ozone and PM10, these thresholds of significance are set at the project level to enable the air district to comply with their regional goals for reaching attainment by a certain future date.

Sensitive receptor locations include schools, day care centers, parks/playgrounds, hospitals or nursing centers, and residential dwelling units (FRAQMD 2024). For sensitive receptors, there would be a significant impact if TAC emissions exceed 10 in a million for cancer risk or a noncarcinogenic hazard index of 1 for the maximally exposed individual. For projects located within 1,000 feet of a sensitive receptor location, an analysis of the impact of diesel particulate matter should be included (FRAQMD 2024).

Neither the FRAQMD nor the NSAQMD have established a threshold of significance for GHG emissions. However, the Sacramento Metropolitan Air Quality Management District (SMAQMD) has adopted CEQA thresholds for GHG emissions. In the absence of a local threshold, Yuba Water determined that the SMAQMD thresholds would be appropriate to evaluate the significance of GHG emissions from construction activities and operations as GHG emissions are global. The SMAQMD has a threshold of 1,100 metric tons (MT) of CO2e for construction-related GHG emissions (SMAQMD 2020). The SMAQMD policy further provides that during operations the project proponent must demonstrate consistency with the Climate Change Scoping Plan by implementing applicable BMPs, or equivalent on-site or off-site mitigation. All projects must implement Tier 1 BMPs to design and construct projects without natural gas infrastructure and to meet current CalGreen Tier 2 standards. Projects that exceed 1,100 MTs CO2e per year during operation after implementation of Tier 1 BMPs shall implement Tier 2 BMPs related to reducing VMT (SMAQMD 2020).

15.5 Environmental Impact Analysis

15.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact AQ-PP-1: Conflicts with Applicable Air Quality Plan from Construction Activities

For the portion of the Project Area in Yuba County, construction activities must be consistent with FRAQMD rules and regulations, as well as with the 2018 Air Quality Attainment Plan for the Northern Sacramento Valley. For the portions of the Project Area in Sierra and Nevada Counties, construction activities must be consistent with NSAQMD rules and regulations.

Construction activities would include site preparation, grading, use of off-road heavy equipment, worker, vendor, and haul truck travel, and asphalt paving. While construction would occur in various locations over the course of 20 years, a preliminary construction schedule is shown in Appendix 2F to identify time periods of potential overlap where maximum emissions may occur. These construction activities would result in emissions of ROG, NOx, PM10, and PM2.5 from construction equipment and vehicle exhaust. ROG would be generated from asphalt paving, painting, and architectural coating. Maximum daily construction emissions for the year with highest ROG, NOx, and PM10 emissions are shown and compared to their relevant air district threshold in Table 15.5-1 through Table 15.5-4. Emissions for other criteria air pollutants are included in Appendix 15B.

In Yuba County, where the recreational facilities are located and construction could span 20 years, the most construction-intensive period for ROG and NOx would be Year 2, where improvements could occur concurrently at the New Colgate Powerhouse River Access, Sunset Vista Observation Site, Cottage Creek Picnic Site, and the recreational wastewater systems (septic and leach fields). PM10 would be greatest in Year 5 during the major rehabilitation of Hornswoggle Group Campground, Shadow Ridge Campground, and Moran Road Boating Site. As the TDS was assumed to be constructed in Year 1 and the maximum unmitigated daily emissions for ROG, NOx, and PM10 would occur in Year 2, Year 2, and Year 5 respectively, the maximum unmitigated daily emissions are presented in Table 15.5-1.

Table 15.5-1. Yuba County: Unmitigated Maximum Daily Construction Emissions.

	Emissions (pounds/day)		
	ROG	**NOx**	**PM10**
Maximum Day[1]	3.63	39.23	39.52
Feather River AQMD Thresholds	25	25	80
Exceeds Threshold?	No	**Yes**	No

Source: Appendix 15B

[1] The maximum daily emissions for each pollutant may not occur in the same year.

In Sierra County, construction activities at Lohman Ridge Tunnel, Our House Diversion Dam Outlet, and Log Cabin Diversion Dam Outlet would occur in the first two years after approval of the license application. As shown in Table 15.5-2, emissions would fall in the Level B Thresholds range thereby requiring more extensive mitigations per guidance from Northern Sierra AQMD. Because only one pollutant would be in the Level B Thresholds range, emissions in Sierra County would be less than significant.

Table 15.5-2. Sierra County: Unmitigated Maximum Daily Construction Emissions.

	Emissions (pounds/day)		
	ROG	**NOx**	**PM10**
Maximum Day[1]	4.93	47.08	4.06
NSAQMD Level A Thresholds	< 24	< 24	< 79
Exceeds Threshold?	No	**Yes**	No
Northern Sierra AQMD Level B Thresholds	24 - 136	24 - 136	79 - 136
Exceeds Threshold?	No	No	No

Source: Appendix 15B

[1] The maximum daily emissions for each pollutant may not occur in the same year.

As previously discussed, FRAQMD has established thresholds of significance for NO_x, ROG, and PM_{10} emissions, each for construction and for project operations. The NSAQMD has established thresholds of significance for NO_x, ROG, and PM_{10} emissions that can be applied to both construction and operational emissions. Exceedance of these thresholds would constitute a significant impact on consistency with applicable air quality plans for a project-level evaluation for that district, but would not result in an exceedance in a neighboring district. As shown in Table 15.5-1 and Table 15.5-2, there would be an exceedance for NO_x in both FRAQMD and NSAQMD thresholds during construction.

Mitigation Measures:

MM-AQ-1: Implement Best Management Practices to Reduce Emissions during Construction

Standard conditions and best management practices from applicable state regulations or the local air district are listed below.

- Haul trucks would be compliant with CARB's Truck and Bus Regulation, which mandates that nearly all trucks will be required to have 2010 or newer model year engines to reduce particulate matter and oxides of nitrogen emissions.
- In accordance with the In-Use Off-Road Diesel Fueled Fleet Regulation, renewable diesel is required to be used.
- A dust control plan would be required per NSAQMD Rule 226 Dust Control. This would be required by the air district and not considered a mitigation. The construction emissions calculated incorporate twice daily watering, which is a standard condition of dust control plans and would achieve a default PM10 and PM2.5 reduction of 61 percent. Other standard dust controls include limiting speeds to 15 mph on unpaved roads, suspending construction when winds exceed 20 mph, street sweeping/washing, seeding, and maintaining a minimum 6 inches of freeboard in the bed of a transport vehicle (NSAQMD 2024).
- The FRAQMD recommends standard mitigation measures (for projects that do not exceed the construction thresholds of significance) and best available mitigation measures (for projects that do exceed the construction thresholds of significance) for construction as described below (FRAQMD 2024). Both standard and best available mitigation measures would be required.

Standard mitigation measures:

1. Implement the Fugitive Dust Control Plan
2. Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0).
3. The contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of onsite operation.
4. Limiting idling time to 5 minutes – saves fuel and reduces emissions. (State idling rule: commercial diesel vehicles-13 C.C.R. Chapter 10 § 2485 effective 02/01/2005; off road

diesel vehicles- 13 C.C.R Chapter 9 Article 4.8 § 2449 effective 05/01/2008)

5. Utilize existing power sources (e.g. power poles) or clean fuel generators rather than temporary power generators.
6. Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
7. Portable engines and portable engine-driven equipment units used at the Project work site, with the exception of on-road and off-road motor vehicles, may require California Air Resources Board Portable Equipment Registration with the State or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with the ARB or the District to determine registration and permitting requirements prior to equipment operation at the site.

Best available mitigation measures

1. All grading operations on a Project should be suspended when winds exceed 20 mph or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.
2. Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management District and as necessary to prevent fugitive dust violations.
3. An operational water truck should be available at all times. Apply water to control dust as needed to prevent visible emissions violations and offsite dust impacts.
4. Onsite dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind blown dust emissions. Incorporate the use of approved non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas.
5. All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.
6. Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all-inactive construction areas (previously graded areas that remain inactive for 96 hours) including unpaved roads and employee/equipment parking areas.
7. To prevent track-out, wheel washers should be installed where Project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.
8. Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the Project site.
9. Provide temporary traffic control as needed during all phases of construction to improve

traffic flow, as deemed appropriate by the Department of Public Works and/or Caltrans and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph.

10. Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, onsite enforcement, and signage.
11. Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.
12. Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the Project site. No open burning of vegetative waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et. al.) may be conducted at the Project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

MM-AQ-2: Implementation of Emission Reducing Equipment and Develop Equipment and Vehicle Inventory

Yuba Water will require contractors to include the use of Tier 4 final or other emission reducing equipment, where feasible, into engineering plans and bid documents. Yuba Water will require its contractor to prepare a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty (equal to or greater than 50 horsepower) off-road (portable and mobile) equipment that will be used an aggregate of 40 or more hours for the construction Project including owned, leased, and subcontractor vehicles). The contractor will calculate the emissions as compared to FRAQMD and NSAQMD thresholds of significance for air quality and submit their findings to the appropriate air district prior to commencing construction. Estimated emissions will be shown to be below the thresholds for ROG, NOx, and PM or will need re-evaluation and coordination with the appropriate air district to achieve compliance with the thresholds. The Project will provide a monthly summary of heavy-duty off-road equipment usage to FRAQMD and NSAQMD, as appropriate, throughout Project construction. A final summary at the end of construction for each major construction activity will be submitted to FRAQMD and NSAQMD, as appropriate, within 60 days of completion. Data to be collected includes construction equipment (number of pieces of each equipment type, model year, engine horsepower and tier, hours of operation for each type), haul trucks (number of heavy-duty haul truck trips, on-road and off-road distance for haul truck trips), number of construction workers per day, and total volume of cut/fill.

This impact would be mitigated to less than significant through mitigation measures **MM-AQ-1** and **MM-AQ-2**. **MM-AQ-1** would be consistent with Goal HS6 Construction Emissions in the Yuba County 2030 General Plan to implement emissions control measures for construction as recommended by FRAQMD. **MM-AQ-2** would require Tier 4 equipment to be used where feasible for all construction activities (see Section 15.3.1.2 above). In order to limit NOx and PM emissions from off-road equipment, Tier 4 final equipment should be used where feasible for all construction activities. It is anticipated that not all equipment will meet the Tier 4 final standard so approximately 90 percent of equipment was modeled to meet the Tier 4 final constraint. Other acceptable alternatives to reduce NOx and PM emissions from off-road equipment may also

include CARB-Approved low emission diesel products, alternative fuels, engine retrofit technology (Carl Moyer Guidelines), aftertreatment products, and/or other options as they become available. Combined, these two mitigation measures would ensure that construction emissions do not exceed applicable significance thresholds designed to ensure consistency with applicable air quality plans (Table 15.5-3 and Table 15.5-4). Therefore, YRDP construction emissions under the Proposed Projects would not conflict with applicable air quality plans and this impact would be **less than significant with mitigation incorporated**.

Table 15.5-3. Yuba County: Mitigated Maximum Daily Construction Emissions.

	Emissions (pounds/day)		
	ROG	**NOx**	**PM10**
Maximum Day[1]	1.65	21.94	23.14
FRAQMD Thresholds	25	25	80
Exceeds Threshold?	No	No	No

Source: Appendix 15B

[1] The maximum daily emissions for each pollutant may not occur in the same year.

Table 15.5-4. Sierra County: Mitigated Maximum Daily Construction Emissions.

	Emissions (pounds/day)		
	ROG	**NOx**	**PM10**
Maximum Year	2.63	30.21	3.34
Northern Sierra AQMD Level A Thresholds	< 24	< 24	< 79
Exceeds Threshold?	No	**Yes**	No
Northern Sierra AQMD Level B Thresholds	24 - 136	24 - 136	79 - 136
Exceeds Threshold?	No	No	No

Source: Appendix 15B

YRDP Impact AQ-PP-2: Conflicts with Applicable Air Quality Plan from Operations

YRDP operational emissions would include a continuation of existing operational, maintenance, and inspection emissions as well as an increase in vehicle emissions and additional campfire emissions from more visitors due to the recreational improvements.

YRDP operational emissions would include tailpipe emissions from additional visits and campfire emissions. Existing operational mobile emissions were subtracted from the operational mobile emissions for 2030, 2040, and 2050 to calculate the maximum mobile emissions from only the Proposed YRDP Project to air quality and GHG emissions. While visits would increase in future years, emissions for ROG, NOx, CO, SOx, and CO_2 would decline as the fleet mix gets cleaner in years 2030 and 2040. A slight uptick in emissions is seen in 2050 for CO, SOx, and CO_2 as the incremental change of more fuel-efficient cars is not outweighed by increasing VMT. PM emissions would increase in all future years of analysis as it trends with increasing VMT and is not as influenced by reduced tailpipe emissions as brake wear and tire wear become a larger portion of the PM emissions.

At full buildout, there would be 45 new/proposed campsites (27 at Kelly Ridge campground and 18 at Shadow Ridge campground). Campfire emissions assume one fire ring per campsite and that one bundle of firewood is burned per fire ring per day. Table 15.5-5 shows the proposed daily operational emissions by buildout year and maximum emissions (operational emissions minus existing emissions). Based on the assumption of all 45 fire rings burning on the same day simultaneously, there would be an exceedance for ROG. FRAQMD's Regulation II – Open Burning would not apply to recreational fires, provided that there are no prohibited materials being burned.

Table 15.5-5. Proposed Daily Operational Emissions.

	pounds/day						metric ton/day		
Year	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
Non-Peak Season Mobile Emissions									
2030	10.01	10.55	307.73	0.91	5.67	1.91	41.98	0.00	0.00
2040	7.30	7.38	272.55	0.90	6.10	1.96	41.12	0.00	0.00
2050	6.84	7.19	288.65	0.96	6.69	2.12	44.21	0.00	0.00
Peak Season Mobile Emissions									
2030	37.93	38.98	1,142.42	3.41	21.11	7.09	156.24	0.00	0.00
2040	27.74	27.20	1,012.29	3.34	22.72	7.28	153.07	0.00	0.00
2050	26.00	26.51	1,072.37	3.59	24.91	7.90	164.59	0.00	0.00
Proposed Campfires[1]									
2050	119.80	1.36	132.14	0.21	18.10	18.10	0.81	0.00	0.00
Maximum Project Emissions (2030)	86.12	(71.10)	(820.58)	0.02	19.65	17.90	(7.82)	(0.00)	(0.00)
Maximum Project Emissions (2040)	83.42	(74.28)	(855.76)	0.00	21.26	17.95	(8.67)	(0.00)	(0.00)
Maximum Project Emissions (2050)	82.96	(74.46)	(839.66)	0.07	23.46	18.17	(5.58)	(0.00)	(0.00)
Feather River AQMD Thresholds	25	25	-	-	80	-	-	-	-
Exceeds Thresholds?	**Yes**	**No**	**-**	**-**	**No**	**-**	**-**	**-**	**-**

[1] Note: Proposed campfire emissions only include the additional 45 new fire rings.

The FRAQMD maintains burn zone maps for Sutter and Yuba County to communicate burn day status. The Project Area falls within Yuba County Burn Management Zone 4. While agricultural and residential open burning require burn permits, recreational campfires typically do not require permits as long as campfires are restricted to developed recreation sites within agency-provided fire rings. Before burning, visitors should check the burn day status with FRAQMD (https://www.fraqmd.org/burn-day-status), the Forest Service, and CalFire websites for the current burn status to make sure it is an allowable burn day. New fire rings at the Kelly Ridge Campground would be located in the Tahoe National Forest while Shadow Ridge Campground is located in the PNF. Tahoe National Forest manages both proposed campgrounds via an agreement so visitors should check with Tahoe National Forest for fire restrictions and burn status. Further questions can be answered through email or phone (Tahoe National Forest - Contact Us). Recreational fires are only allowed on permissive burn days. While recreational campfires would only be permitted by the Forest Service on allowable burn days, it is possible that all 45 fire rings could be operable on the same day and cause an exceedance of ROG. As campfire emissions are uncontrolled (e.g. no filters available) and because Yuba Water lacks the authority to regulate these emissions, there would be no feasible mitigation. Therefore, impacts during operation would be significant and unavoidable.

YRDP operations can establish consistency with the applicable air quality plans by fulfilling two criteria. The first criterion would be whether proposed YRDP facilities and operations are consistent with the growth assumptions for population and vehicle miles travelled for the region that were used as the basis of the air quality plan. YRDP operations would not permanently increase the population as it does not include housing and VMT would not substantially increase because construction workers would be sourced from nearby towns. As shown in Table 15.5-5, the increase in visitor VMT related to the expanded recreational facilities would not cause an exceedance for any air pollutant. The second criterion is whether the Proposed YRDP Project would increase the frequency or severity of existing air quality violations, contribute to new violations, or delay the timely attainment of air quality standards. Improvements to fuel efficiency

and an increased number of electric vehicles in the future years would decrease ROG and NOx vehicle emissions compared to existing conditions despite the increase in VMT over time. However, as shown in Table 15.5-5, there would be an exceedance from ROG emissions from campfires during operations, which would result in a significant and unavoidable impact. As campfire emissions are uncontrolled (e.g. no filters available) and because Yuba Water lacks the authority to regulate these emissions, there would be no feasible mitigation.

The resource management plans, as listed in Chapter 2, Project Description, would result in limited and seasonal use of equipment and vehicles. Emissions from these trips would be minimal and spread out over the duration of the license and geographically at different locations around the Project Area. For biological surveys, monitoring, and other routine maintenance, many of these activities are already occurring in the Existing Condition as well. The most emission intensive (requiring the most trips and hauling) of these plans would be the *Sediment Management Plan*, which was analyzed independently in an Initial Study/Mitigated Negative Declaration (IS/MND) (YCWA 2019). This plan is also already being implemented in the existing condition and therefore would not result in new or additional impacts under the Proposed YRDP Project.

The *Sediment Management Plan* assessed impacts from removing sediment from the Log Cabin and Our House Diversion Dams and transporting that sediment to select disposal sites. As described in the IS/MND, in one year, the maximum annual sediment volume was estimated to be up to 140,000 cubic yards (CY) of hauled material over a 60-day period. This would result in a total of 9,333 truck round trips in a year or 156 round trips per working day. Impacts to air quality were potentially significant requiring implementation of Tier 4 final equipment, chemical stabilizers to reduce PM10 emissions, and limiting speeds on unpaved roads to 15 mph. With incorporation of mitigation measures, impacts to air quality were found to be less than significant. Comparatively, the other management plans would require much fewer equipment hours and trips and therefore result in less emissions. As previously mentioned, many of these plans are already being implemented in the existing condition and would therefore not result in new impacts under the Proposed Projects. Furthermore, resource management plans would be required to adhere to the best management practices and air district regulations for dust control and maintenance of equipment. Therefore, when considering the limited number of new plans in operation together, the management plans would not contribute substantially to daily operational emissions.

Therefore, due to the potential exceedance of TOG thresholds from recreational campfire emissions, operations under the Proposed YRDP Project would conflict with applicable air quality plans and impacts would be **significant and unavoidable**.

YRDP Impact AQ-PP-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction Activities

Yuba County is in nonattainment for ozone and PM10 compared to the state standards. Sierra County is in nonattainment for PM10. Yuba County and Sierra County are in attainment or unclassified for all other criteria air pollutants compared to the state and federal standards.

As shown in Table 15.5-1 the exceedance of NOx during construction would be considered potentially significant as NOx is a precursor for ozone and would require mitigation. As shown in

Table 15.5-3, with incorporation of Mitigation Measure AQ-1 and AQ-2, ROG, NOx, and PM10 emissions would be below the FRAQMD thresholds of significance. The maximum mitigated daily construction ROG, NOx, and PM10 emissions would occur in all in Year 5. The mitigated emissions are modeled assuming that diesel-fueled off-road equipment would achieve 90 percent compliance with the Tier 4 Final standard for engines. The Mitigation Measure AQ-2 would require the contractor to develop a comprehensive equipment and vehicle inventory for construction and recalculate emissions to be below the thresholds of significance for FRAQMD and NSAQMD prior to construction. This effectively sets a performance standard that ensures construction emissions would be less than significant.

Most roads to access these construction sites are assumed to be paved. For limited travel on unpaved roads, a 25 miles per hour speed limit was assumed in the mitigated emissions for a default PM10 and PM2.5 reduction of 44 percent. Paved roads would be swept, achieving a default PM10 and PM2.5 reduction of 9 percent. Impacts to air quality in Yuba County would be less than significant with mitigation incorporated.

As shown in Table 15.5-2, NOx emissions in Sierra County would exceed the Level A Threshold and would be in the Level B Thresholds range. This would be a less than significant impact. Mitigation Measure AQ-1 and AQ-2, as needed in Yuba County, would also be implemented in Sierra County as mitigation. Mitigated emissions for Sierra County are shown in Table 15.5-4. Even though Table 15.5-4 shows NOx emissions in the Level B Thresholds range with incorporation of the Mitigation Measure AQ-1 and AQ-2, there must be two pollutants in the Level B Thresholds range for a significant impact. Therefore, Impacts to air quality in Sierra County would be less than significant with mitigation incorporated.

In summary, YRDP construction associated with the Proposed YRDP Project would generate NOx emissions that would exceed certain significance thresholds. However, implementation of **MM-AQ-1** and **MM-AQ-2** would reduce NOx emissions to levels below the thresholds. As these thresholds are set by the air district to enable them to meet their attainment goals, YRDP construction would not result in cumulatively considerable net increases of any criteria pollutants. Impacts would be **less than significant with mitigation incorporated.**

YRDP Impact AQ-PP-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Yuba County is in nonattainment for ozone and PM10 compared to the state standards. Sierra County is in nonattainment for PM10. Yuba County and Sierra County are in attainment or unclassified for all other criteria air pollutants compared to the state and federal standards.

As previously discussed in YRDP Impact AQ-PP-1, ROG, NOx, and PM10 would be emitted from the 45 new/proposed campsites and operational mobile emissions. This would result in a significant impact to ROG emissions in Yuba County (Table 15.5-5). Campfire emissions would be the main driver for this significant impact from ROG emissions. There would be no significant impact in Sierra County for PM10. Resource management plans would have minimal effect on emissions as most are already occurring in the existing condition and would not constitute a large number of trips.

In summary, YRDP operations associated with the Proposed YRDP Project would generate ROG emissions, which are a precursor to ozone for which the region is in nonattainment, above certain significance thresholds. As there is no feasible mitigation to reduce ROG emissions from campfires and Yuba County is in nonattainment for ozone, YRDP operations would result in cumulatively considerable net increase for ROG. Impacts would be **significant and unavoidable.**

YRDP Impact AQ-PP-5: Expose sensitive receptors to substantial pollutant concentrations

Sensitive receptors are defined in Section 15.2.2.6 above. As shown in Appendix 15A, there are several residences located within one-quarter mile. All other sensitive receptor locations are located beyond the quarter-mile radius of the Proposed Project Boundary. The greatest potential for TAC emissions would be related to diesel PM emissions from use of diesel-powered, heavy-duty construction equipment and off-road vehicles, as well as fugitive dust from grading and excavation activities.

However, these activities would occur sporadically across the Project Area and would not remain concentrated in one location for a long period of time. Therefore, the potential exposure of these residences would be low and would not contribute to a significant health risk. As the Office of Environmental Health Hazard Assessment (OEHHA) uses a 70-year lifetime exposure period, the construction activities would be relatively short-lived and sporadic, both temporally and spatially. The emissions would also decrease drastically with distance away from the construction site. CARB's Air Quality and Land Use Handbook states that PM levels drop by 70 percent at a distance of 500 feet from a roadway (CARB 2005). During operations, ongoing maintenance would generate minimal trips and associated emissions. The quantity of operational emissions would be similar to those present in the existing condition and is anticipated to be well below the any health risk threshold for the following reasons. These mobile emissions would be from light duty vehicles primarily, that are gasoline not diesel fueled, and would have low emission factors. As diesel particulate matter is the driving factor for cancer risk associated with transportation, these mobile emissions would be well below both criteria air pollutant and TAC thresholds of significance. Over time, these mobile emissions would further decrease as vehicles become more fuel efficient and a greater portion of the fleet become electric (Table 15.5-5). Therefore, impacts to sensitive receptors would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact AQ-PP-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Yuba County is in attainment or unclassified for PM2.5, SOx, and CO and Sierra County is in attainment or unclassified for VOC, NOx, PM2.5, SOx, and CO. FRAQMD, which governs Yuba County, and NSAQMD, which governs Sierra County, have both not set a threshold for PM2.5, SOx, and CO. Construction emissions for PM2.5, SOx, and CO in Yuba County and Sierra County are shown below in Table 15.5-6 and Table 15.5-7. (VOC and NOx construction emissions for Sierra County were previously shown in Table 15.5-3 and Table 15.5-4. **MM-AQ-1** and **MM-AQ-2** would further mitigate NOx emissions.) Therefore, YRDP construction would not result in other emissions adversely affecting a substantial number of people. During operation, as shown in Table 15.5-5, the Proposed YRDP Project would not result in an exceedance for PM2.5, SOx, or CO. FRAQMD has not set a threshold for PM2.5, SOx, or CO as they are in attainment for those air pollutants. Odors are addressed in Chapter 15.4 Impact Assessment Methodology. Impacts would

be **less than significant with mitigation incorporated**.

Table 15.5-6. Yuba County: Maximum Daily Construction Emissions.

	Emissions (pounds/day)		
	PM2.5	**SOx**	**CO**
Maximum Day (Unmitigated)[1]	5.29	0.12	52.99
Maximum Day (Mitigated)[1]	3.23	0.12	55.13
Feather River AQMD Thresholds	None	None	None
Exceeds Threshold?	No	No	No

Source: Appendix 15B

[1] The maximum daily emissions for each pollutant may not occur in the same year.

Table 15.5-7. Sierra County: Maximum Daily Construction Emissions.

	Emissions (pounds/day)		
	PM2.5	**SOx**	**CO**
Maximum Day (Unmitigated)[1]	2.04	0.16	47.60
Maximum Day (Mitigated)[1]	1.39	0.16	63.95
Northern Sierra AQMD Thresholds	None	None	None
Exceeds Threshold?	No	No	No

Source: Appendix 15B

[1] The maximum daily emissions for each pollutant may not occur in the same year.

YRDP Impact GHG-PP-1: Generation of GHG Emissions from Construction Activities

The total GHG emissions associated with YRDP construction activities would be 121,017 $MTCO_2e$ over the 20-year construction period (see Appendix 15B). Typically, emissions are annualized over the lifetimes of the projects evaluated, which for the Proposed Projects would be the 50-year license. The annualized construction emissions would be 2,420 $MTCO_2e$. As this would exceed the 1,100 MTCO2e annual threshold from SMAQMD, this would be a potentially significant impact. **MM AQ-1** and **MM AQ-2** would reduce these construction GHG emissions, but these would not be quantifiable specific to GHG emissions. At this time, there are no further technologically advanced and commercially available construction equipment to mitigate GHG emissions from construction equipment. Impacts would be **significant and unavoidable.**

YRDP Impact GHG-PP-2: Generation of GHG Emissions from Operations

For all future years (2030, 2040, 2050), operational GHG emissions would be negative as the power generation from hydropower is a clean source of energy that offsets power plants using fossil fuels. However, the reduced flow designed for a beneficial impact to fisheries would mean less power generation under the Proposed YRDP Project compared to the currently operating existing condition and as compared to the future baseline. The reduction in YRDP hydropower generation would result in 5,176 MTCO2e/year of additional GHG emissions, compared to the existing condition (Appendix 15D). This would equate to approximately a 4 percent reduction in power generation compared to the existing condition.

With regard to vehicle trips, regulation would require more fuel efficient and electric cars, which would reduce operational mobile emissions compared to existing condition. Operational trips would be similar as the existing condition and as shown in Table 15.5-5, operational mobile emissions would remain relatively unchanged despite the increase in visitors over time. Compared to the SMAQMD GHG threshold of 1,100 $MTCO_2e$/year, operational GHG emissions would be above the threshold and potentially significant. The BMPs listed by SMAQMD are designed for building structures (residential/commercial) and would not be appropriate for this type of FERC

relicensing project. Impacts would be **significant and unavoidable**.

YRDP Impact GHG-PP-3: Conflict with a GHG Reduction Plan

Neither Yuba Water, Yuba County, Nevada County, nor Sierra County have adopted any thresholds of significance for GHG emissions. The latest 2022 Scoping Plan for the State of California sets GHG reduction targets and strategies to achieve carbon neutrality by 2045. In the 2030 Yuba County General Plan, Action HS5.1 requires Yuba County to prepare and adopt a Greenhouse Gas Reduction Plan, but this plan has not yet been prepared. Under the Proposed YRDP Project, the YRDP would continue to provide local generation through hydropower and therefore would be consistent with Sierra County's Energy Action Plan, which includes Goal 3: Increase Local Generation and Use from Renewables in that regard. (Note: Because of the size of the New Colgate Powerhouse (315 MW), power generated from this source would not qualify towards Renewable Portfolio Standard (RPS) targets, which encourages small renewable producers. It would still be considered local generation).

The Proposed YRDP Project would have a potentially significant impact related to conflicts with GHG reduction plans. While YRDP would continue to generate a substantial amount of carbon free power locally and assist California in reaching their carbon neutrality goals, there would be a 4 percent reduction in power generation and a resulting increase in GHG emissions. As discussed in Section 15.4.3, it would be speculative and beyond the scope of CEQA to predict to what extent the hydropower losses would be replaced with clean energy or fossil fuel sources. Compliance with Mitigation Measures AQ-1 and AQ-2 as required by other air quality impacts, would further reduce GHG emissions by ensuring use of standard conditions and best management practices during construction, and use of advanced engine and fuel technologies. There would be no feasible mitigation to reduce the GHG emissions from the hydropower losses as this is beyond the control of Yuba Water. Therefore, due to the findings in YRDP Impact GHG-PP-1 and YRDP Impact GHG-PP-2, the Proposed YRDP Project would increase GHG emissions in a manner not consistent with GHG reduction plans such as the 2022 Scoping Plan. Impacts would be **significant and unavoidable.**

Narrows Impact AQ-PP-1 Conflicts with Applicable Air Quality Plan from Construction

There would be no construction-related air quality impacts under the Proposed Narrows Project because there would be no construction associated with the Narrows Project. There would be **no impact**, and no CEQA mitigation would be required.

Narrows Impact AQ-PP-2: Conflicts with Applicable Air Quality Plan from Operations the Proposed Narrows Project would implement the four proposed conditions: Proposed Condition 1: Supplemental Flows; Proposed Condition 2: Ramping Rates; Proposed Condition 3: Fish Stocking; Proposed Condition 4: Consult with the State Historic Preservation Office (SHPO) and Affiliated Native American Tribes. In addition, Yuba Water proposes three new measures: Proposed Condition 5: Water Surface Elevation in Englebright Reservoir; Proposed Condition 6: Nesting Peregrine Falcon Protection; and Proposed Condition 7: Bat Management. There would be a slight increase in vehicular emissions from trips for fish stocking, cultural surveys, peregrine falcon surveys, and bat inspections, but these would be intermittent and limited.

Proposed Narrows Project maintenance activities and emissions would be similar to existing conditions as it would not require substantially more additional trips or operations. As such, these proposed conditions would have minimal impacts on air quality. These periodic operational and maintenance trips and activities would be regulated in accordance with the FRAQMD and NSAQMD rules and regulations and would not conflict with the Air Quality Element of the General Plan of Yuba and Nevada Counties. Impacts would be **less than significant**, and no CEQA mitigation would be required.

Narrows Impact AQ-PP-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction

There would be no construction-related air quality impacts under the Proposed Narrows Project because there would be no construction associated with the Narrows Project. There would be **no impact**, and no CEQA mitigation would be required.

Narrows Impact AQ-PP-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Nevada County is in nonattainment for ozone compared to the federal standard, and both Yuba and Nevada Counties are in nonattainment for ozone and PM10 compared to the state standard. As stated in *Narrows Impact AQ-PP-2*, the Proposed Narrows Project would have a minimal impact on air quality and would not exceed any thresholds of significance set by NSAQMD for ROG, NOx, or PM10. Narrows Project emissions would not result in a cumulatively considerable net increase of any criteria pollutant. Impacts would be **less than significant**, and no CEQA mitigation would be required.

Narrows Impact AQ-PP-5: Expose sensitive receptors to substantial pollutant concentrations

As noted, there are several residences located within one-quarter mile of the Proposed Projects Boundary; all other sensitive receptor locations are located beyond the quarter-mile radius of the Proposed Projects Boundary. As there would be no construction emissions associated with the Narrows Project, there would be no impact to sensitive receptors from construction emissions. During operations, there would be minimal trips for fish stocking, cultural surveys, peregrine falcon surveys, and bat inspections, but these would be intermittent and limited. Vehicle emissions would further decline over time due to vehicles becoming more fuel efficient. Therefore, Proposed Narrows Project impacts to sensitive receptors would be **less than significant**, and no CEQA mitigation would be required.

Narrows Impact AQ-PP-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Nevada County and Yuba County are in attainment or unclassified for PM2.5, CO, and SOx. As stated in *Narrows Impact AQ-PP-2*, the Proposed Narrows Project would have a minimal impact on air quality. NSAQMD has not set any thresholds of significance for PM2.5, CO, and SOx. Odors are discussed in Section 15.4 Impact Assessment Methodology. Therefore, the Narrows Project emissions would not result in a cumulatively considerable net increase of any criteria

pollutant. Impacts would be **less than significant**, and no CEQA mitigation would be required.

Narrows Impact GHG-PP-1: Generation of GHG Emissions from Operations

As described in *Narrows Impact AQ-PP-2*, there would be a slight increase in GHG emissions from trips to carry out fish stocking, biological surveys and inspections. Proposed Narrows Project maintenance activities and emissions would be similar to the existing conditions. Operations of the Narrows Project hydropower facilities would continue to provide a low carbon source of electricity because electricity generated from hydropower results in much less GHG emissions compared to fossil fuels; however, hydropower generation would be slightly reduced under the Proposed Narrows Project. The reduction in Narrows Project hydropower generation would result in 6 MTCO2e/year of additional GHG emissions, compared to the existing condition (Appendix 15D). This would equate to approximately a 0.1 percent reduction in power generation compared to the existing condition. Compared to the SMAQMD GHG threshold of 1,100 $MTCO_2e$/year, operational GHG emissions would be below the threshold and **less than significant.** No CEQA mitigation would be required.

Narrows Impact GHG-PP-2: Conflict with a GHG Reduction Plan

Yuba Water has not adopted any thresholds of significance or plans to reduce GHG emissions. The latest 2022 Scoping Plan for the State of California sets GHG reduction targets and strategies to achieve carbon neutrality by 2045. The Narrows Project is located in Nevada County, which published an Energy Action Plan in 2019. The Energy Action Plan focused on accelerating energy efficiency, water efficiency and renewable energy efforts already underway in Nevada County. As there would be no construction for the Narrows Project and operations of the existing Narrows hydropower facilities would continue to provide a low carbon source of electricity at a similar power generation to existing condition, the Proposed Narrows Project would not conflict with the GHG Reduction Plan and there would be a **less than significant** impact. No CEQA mitigation would be required.

15.5.2 Alternative 1 compared to the Existing Condition

Alternative 1 would not change any of the non-flow-related components from the Proposed Projects so emissions from those components would remain the same. As direct air pollutant and GHG emissions are not tied to the hydrological operational changes of Alternative 1, impacts would be the same for both the Alternative 1 and the Proposed Projects for direct air quality and GHG emissions. Indirect GHG emissions from the loss of hydropower generation would change due to the changed flows.

YRDP Impact AQ-Alt1-1: Conflicts with Applicable Air Quality Plan from Construction Activities

Alternative 1 would include the same YRDP construction activities as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for YRDP Impact AQ-PP-1, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, the impacts relating to conflicts with applicable air quality plans from YRDP construction under Alternative 1 would be **less than significant with mitigation incorporated**.

YRDP Impact AQ-Alt1-2: Conflicts with Applicable Air Quality Plan from Operations

Alternative 1 would include the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-2, YRDP operational emissions under Alternative 1 would conflict with applicable air quality plans and no feasible mitigation is available. Therefore, this impact would be **significant and unavoidable**.

YRDP Impact AQ-Alt1-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction Activities

Alternative 1 would include the same YRDP construction activities as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for YRDP Impact AQ-PP-3, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, YRDP construction under Alternative 1 would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. Therefore, this impact would be **less than significant with mitigation incorporated**.

YRDP Impact AQ-Alt1-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Alternative 1 would include the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-4, YRDP operational emissions under Alternative 1 would result in a cumulatively considerable net increase of ROG emissions and no feasible mitigation is available. Therefore, this impact would be **significant and unavoidable.**

YRDP Impact AQ-Alt1-5: Expose sensitive receptors to substantial pollutant concentrations

Alternative 1 would include the same YRDP construction activities and non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-5, YRDP construction and operations under Alternative 1 would not expose sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be **less than significant**.

YRDP Impact AQ-Alt1-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Alternative 1 would include the same YRDP construction activities and non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-6, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, YRDP construction and operations under Alternative 1 would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, this impact would

be **less than significant with mitigation incorporated.**

YRDP Impact GHG-Alt1-1: Generation of GHG Emissions from Construction Activities

Alternative 1 would include the same YRDP construction activities as the Proposed Projects and would therefore have the same associated impacts. As explained above for YRDP Impact GHG-PP-1, construction emissions would be 2,420 MTCO2e. MM AQ-1 and MM AQ-2 would reduce these construction GHG emissions, but these would not be quantifiable specific to GHG emissions. At this time, there are no further technologically advanced and commercially available construction equipment to mitigate GHG emissions from construction equipment. Impacts would be **significant and unavoidable.**

YRDP Impact GHG-Alt1-2: Generation of GHG Emissions from Operations

YRDP operations under Alternative 1 would result in 3,969 MTCO2e/year of additional GHG emissions from the reduction in hydropower generation compared to existing conditions (Appendix 15D). This would equate to approximately a 3 percent reduction in power generation. Operational mobile emissions would remain similar to existing conditions. Compared to the SMAQMD GHG threshold of 1,100 $MTCO_2e$/year, GHG emissions resulting from YRDP operations under Alternative 1 would exceed the GHG threshold. The BMPs listed by SMAQMD are designed for building structures (residential/commercial) and would not be appropriate for this type of FERC relicensing project. Therefore, the impacts would be **significant and unavoidable**.

YRDP Impact GHG-Alt1-3: Conflict with a GHG Reduction Plan

Neither Yuba Water, Yuba County, Nevada County, nor Sierra County have adopted any thresholds of significance for GHG emissions. The latest 2022 Scoping Plan for the State of California sets GHG reduction targets and strategies to achieve carbon neutrality by 2045. In the 2030 Yuba County General Plan, Action HS5.1 requires Yuba County to prepare and adopt a Greenhouse Gas Reduction Plan, but this plan has not yet been prepared. The YRDP operations under Alternative 1 would continue to provide local generation through hydropower and therefore would be consistent with Sierra County's Energy Action Plan, which includes Goal 3: Increase Local Generation and Use from Renewables in that regard. (Note: Because of the size of the New Colgate Powerhouse (315 MW), power generated from this source would not qualify towards Renewable Portfolio Standard (RPS) targets, which encourages small renewable producers. It would still be considered local generation.)

YRDP construction and operations under Alternative 1 would have a potentially significant impact related to conflicts with GHG reduction plans. While YRDP operations under Alternative 1 would continue to generate a substantial amount of carbon free power and assist California in reaching their carbon neutrality goals, there would be a 3 percent reduction in power generation and a resulting increase in GHG emissions. As discussed in Section 15.4.3., it would be speculative and beyond the scope of CEQA to predict to what extent hydropower losses would be replaced with clean energy or fossil fuel sources. Compliance with Mitigation Measures AQ-1 and AQ-2, as required by other air quality impacts, would further reduce GHG emissions by ensuring use of standard conditions and best management practices during construction, and use of advanced engine and fuel technologies. There would be no feasible mitigation to reduce the GHG emissions

from the hydropower losses as this is beyond the control of Yuba Water. Therefore, due to the findings in YRDP Impact GHG-Alt1-1 and YRDP Impact GHG-Alt1-2, the YRDP construction and operations under Alternative 1 would increase GHG emissions in a manner not consistent with GHG reduction plans such as the 2022 Scoping Plan. Impacts would be **significant and unavoidable**.

Narrows Impact AQ-Alt1-1 Conflicts with Applicable Air Quality Plan from Construction

There would be no construction-related air quality impacts associated with the Narrows Project under Alternative 1 because there would be no construction associated with the Narrows Project. There would be **no impact**.

Narrows Impact AQ-Alt1-2: Conflicts with Applicable Air Quality Plan from Operations

Narrows Project non-flow operations under Alternative 1 would be the same as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-1, Narrows Project operations under Alternative 1 would not conflict with applicable air quality plans. Therefore, this impact would be **less than significant**.

Narrows Impact AQ-Alt1-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction

There would be no construction-related air quality impacts associated with the Narrows Project under Alternative 1 because there would be no construction associated with the Narrows Project. There would be **no impact**.

Narrows Impact AQ-Alt1-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Narrows Project non-flow operations would be the same under Alternative 1 and the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-4, Narrows Project operations under Alternative 1 would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. Therefore, this impact would be **less than significant**.

Narrows Impact AQ-Alt1-5: Expose sensitive receptors to substantial pollutant concentrations

Narrows Project non-flow operations under Alternative 1 would be the same as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-5, Narrows Project operations under Alternative 1 would not expose sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be **less than significant**.

Narrows Impact AQ-Alt1-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Narrows Project non-flow operations under Alternative 1 would be the same as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-6, Narrows Project operations under Alternative 1 would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, this impact would be **less than significant**.

Narrows Impact GHG-Alt1-1: Generation of GHG Emissions from Operations

Narrows Project non-flow operations under Alternative 1 would be the same as the Proposed Projects and would therefore have the same associated impacts. As described above for Narrows Impact GHG-PP-1, Narrows Project non-hydropower operational emissions under Alternative 1 would not significantly change relative to the Existing Condition.

Narrows Project hydropower operations under Alternative 1 would result in 13 MTCO2e/year less GHG emissions compared to the existing condition (Appendix 15D). This would equate to 0.1 percent more power generation than the existing condition. Compared to the SMAQMD GHG threshold of 1,100 MTCO2e/year, GHG emissions resulting from Narrows Project operations under Alternative 1 would be below the threshold. Therefore, this impact would be **less than significant**.

Narrows Impact GHG-Alt1-2: Conflict with a GHG Reduction Plan

Yuba Water has not adopted any thresholds of significance or plans to reduce GHG emissions. The latest 2022 Scoping Plan for the State of California sets GHG reduction targets and strategies to achieve carbon neutrality by 2045. The Narrows Project under Alternative 1 is located in Nevada County, which published an Energy Action Plan in 2019. The Energy Action Plan focused on accelerating energy efficiency, water efficiency and renewable energy efforts already underway in Nevada County. As there would be no construction for the Narrows Project under Alternative 1 and operations of the existing Narrows hydropower facilities under Alternative 1 would continue to provide a low carbon source of electricity, Narrows Project operations under Alternative 1 would not conflict with the GHG Reduction Plan and there would be a **less than significant** impact.

Indirect Impact GHG-Alt1-1: Indirect impacts from YB/DS operations under Alternative 1

Air quality would not be affected by the flow changes from YB/DS operations under Alternative 1.

YB/DS operations under Alternative 1 would result in a loss of power generation for PG&E projects and NID's project as compared to the Future Baseline. It is estimated that the loss to average annual generation in dry and critically dry water years would be 2.3% for PG&E projects and 2.2% for NID's project. This loss would outweigh the gain of 0.8% of generation from YWA's projects, which would come from an increase in flow in the Lower Yuba River downstream of Englebright Dam. The loss in power generation would mean that the potential for generating clean hydropower across the region would be diminished and the potential for the state to substitute that energy with fossil fuels would increase. While there would be operational flexibility in the manner of the release of additional water to meet the 15.6 TAF in dry and critically dry water years, the additional upstream releases as a whole would still have a negative effect on PG&E projects and

NID's project generation because it would release more water into the South Yuba River Basin and bypass PG&E's and NID's primary generation powerhouses on the Bear River. The full capacity of these powerhouses for clean hydropower generation would not be realized. Because it would be speculative to predict to what extent this power would be replaced with clean energy or fossil fuels, there is the potential for an increase in GHG emissions. Accordingly, this impact would be **potentially significant and unavoidable**.

15.5.3 Alternative 2 compared to the Existing Condition

Alternative 2 would not change any of the non-flow-related components from the Proposed Projects so emissions from those components would remain the same. As direct air pollutant and GHG emissions are not tied to the hydrological operational changes of Alternative 2, impacts would be the same for both the Alternative 2 and the Proposed Projects for direct air quality and GHG emissions. Indirect GHG emissions from the loss of hydropower generation would change due to the changed flows.

YRDP Impact AQ-Alt2-1: Conflicts with Applicable Air Quality Plan from Construction Activities

Alternative 2 would include the same YRDP construction activities as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for YRDP Impact AQ-PP-1, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, the impacts relating to conflicts with applicable air quality plans from YRDP construction under Alternative 2 would be **less than significant with mitigation incorporated**.

YRDP Impact AQ-Alt2-2: Conflicts with Applicable Air Quality Plan from Operations

Alternative 2 would include the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-2, YRDP operational emissions under Alternative 2 would conflict with applicable air quality plans and no feasible mitigation is available. Therefore, this impact would be **significant and unavoidable**.

YRDP Impact AQ-Alt2-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction Activities

Alternative 2 would include the same YRDP construction activities as the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for YRDP Impact AQ-PP-3, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, YRDP construction under Alternative 2 would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. Therefore, this impact would be **less than significant with mitigation incorporated**.

YRDP Impact AQ-Alt2-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Alternative 2 would include the same non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-4, YRDP operational emissions under Alternative 2 would result in a cumulatively considerable net increase of ROG emissions and no feasible mitigation is available. Therefore, this impact would be **significant and unavoidable.**

YRDP Impact AQ-Alt2-5: Expose sensitive receptors to substantial pollutant concentrations

Alternative 2 would include the same YRDP construction activities and non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-5, YRDP construction and operations under Alternative 2 would not expose sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be **less than significant**.

YRDP Impact AQ-Alt2-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Alternative 2 would include the same YRDP construction activities and non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. Flow-based changes would not affect air pollutant emissions. For the same reasons explained for YRDP Impact AQ-PP-6, with implementation of Mitigation Measures MM AQ-1 and MM AQ-2, YRDP construction and operations under Alternative 2 would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, this impact would be **less than significant with mitigation incorporated.**

YRDP Impact GHG-Alt2-1: Generation of GHG Emissions from Construction Activities

Alternative 2 would include the same YRDP construction activities and non-flow YRDP operations as the Proposed Projects and would therefore have the same associated impacts. As explained above for YRDP Impact GHG-PP-1, construction emissions would be 2,420 MTCO2e. MM AQ-1 and MM AQ-2 would reduce these construction GHG emissions, but these would not be quantifiable specific to GHG emissions. At this time, there are no further technologically advanced and commercially available construction equipment to mitigate GHG emissions from construction equipment. Impacts would be **significant and unavoidable.**

YRDP Impact GHG-Alt2-2: Generation of GHG Emissions from Operations

YRDP operations under Alternative 2 would result in 7,585 MTCO2e/year of additional GHG emissions compared to existing conditions (Appendix 15D). This would equate to approximately a 6 percent reduction in power generation. Operational mobile emissions would remain similar to existing conditions. Compared to the SMAQMD GHG threshold of 1,100 $MTCO_2e$/year, GHG emissions resulting from YRDP operations under Alternative 2 would exceed the GHG threshold. The BMPs listed by SMAQMD are designed for building structures (residential/commercial) and would not be appropriate for this type of FERC relicensing project. Therefore, the impacts would be **significant and unavoidable**.

YRDP Impact GHG-Alt2-3: Conflict with a GHG Reduction Plan

Neither Yuba Water, Yuba County, Nevada County, nor Sierra County have adopted any thresholds of significance for GHG emissions. The latest 2022 Scoping Plan for the State of California sets GHG reduction targets and strategies to achieve carbon neutrality by 2045. In the 2030 Yuba County General Plan, Action HS5.1 requires Yuba County to prepare and adopt a Greenhouse Gas Reduction Plan, but this plan has not yet been prepared. The YRDP operations under Alternative 2 would provide local generation through hydropower and therefore would be consistent with Sierra County's Energy Action Plan, which includes Goal 3: Increase Local Generation and Use from Renewables in that regard. (Note: Because of the size of the New Colgate Powerhouse (315 MW), power generated from this source would not qualify towards RPS targets, which encourages small renewable producers. It would still be considered local generation.

YRDP construction and operations under Alternative 2 would have a potentially significant impact related to conflicts with GHG reduction plans. While YRDP operations under Alternative 2 would continue to generate a substantial amount of carbon free power and assist California in reaching their carbon neutrality goals, there would be a 6 percent reduction in power generation and a resulting increase in GHG emissions. As discussed in Section 15.4.3, it would be speculative and beyond the scope of CEQA to predict to what extent hydropower losses would be replaced with clean energy or fossil fuel sources. Compliance with Mitigation Measures AQ-1 and AQ-2, as required by other air quality impacts, would reduce GHG emissions by ensuring use of standard conditions and best management practices during construction, and use of advanced engine and fuel technologies. There would be no feasible mitigation to reduce the GHG emissions from the hydropower losses as this is beyond the control of Yuba Water. Therefore, due to the findings in YRDP Impact GHG-Alt2-1 and YRDP Impact GHG-Alt2-2, the YRDP construction and operations under Alternative 2 would increase GHG emissions in a manner not consistent with GHG reduction plans such as the 2022 Scoping Plan. Impacts would be **significant and unavoidable**.

Narrows Impact AQ-Alt2-1 Conflicts with Applicable Air Quality Plan from Construction

There would be no construction-related air quality impacts associated with the Narrows Project under Alternative 2 because there would be no construction associated with the Narrows Project. There would be **no impact**.

Narrows Impact AQ-Alt2-2: Conflicts with Applicable Air Quality Plan from Operations

Narrows Project non-flow operations would be the same under Alternative 2 and the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-1, Narrows Project operations would not conflict with applicable air quality plans. Therefore, this impact would be **less than significant**.

Narrows Impact AQ-Alt2-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction

There would be no construction-related air quality impacts associated with the Narrows Project under Alternative 2 because there would be no construction associated with the Narrows Project.

There would be **no impact**.

Narrows Impact AQ-Alt2-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Narrows Project non-flow operations would be the same under Alternative 2 and the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-4, Narrows Project operations under Alternative 2 would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. Therefore, this impact would be **less than significant**.

Narrows Impact AQ-Alt2-5: Expose sensitive receptors to substantial pollutant concentrations

Narrows Project non-flow operations would be the same under Alternative 2 and the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-5, Narrows Project operations under Alternative 2 would not expose sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be **less than significant**.

Narrows Impact AQ-Alt2-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Narrows Project non-flow operations would be the same under Alternative 2 and the Proposed Projects and would therefore have the same associated impacts. For the same reasons explained for Narrows Impact AQ-PP-6, Narrows Project operations under Alternative 2 would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, this impact would be **less than significant**.

Narrows Impact GHG-Alt2-1: Generation of GHG Emissions from Operations

Narrows Project non-flow operations would be the same under Alternative 2 and the Proposed Projects and would therefore have the same associated impacts. As described above for Narrows Impact GHG-PP-1, Narrows Project non-hydropower operational emissions under Alternative 2 would not significantly change relative to the Existing Condition.

Narrows Project hydropower operations under Alternative 2 would result in 44 MTCO2e/year more GHG emissions compared to the existing condition (Appendix 15D). This would equate to 0.5 percent less power generation than the existing condition. Compared to the SMAQMD GHG threshold of 1,100 MTCO2e/year, GHG emissions resulting from Narrows Project operations under Alternative 2 would be below the threshold. Therefore, this impact would be **less than significant**.

Narrows Impact GHG-Alt2-2: Conflict with a GHG Reduction Plan

Yuba Water has not adopted any thresholds of significance or plans to reduce GHG emissions. The latest 2022 Scoping Plan for the State of California sets GHG reduction targets and strategies to achieve carbon neutrality by 2045. The Narrows Project under Alternative 2 is located in Nevada

County, which published an Energy Action Plan in 2019. The Energy Action Plan focused on accelerating energy efficiency, water efficiency and renewable energy efforts already underway in Nevada County. As there would be no construction for the Narrows Project under Alternative 2 and operations of the existing Narrows hydropower facilities would continue to provide a low carbon source of electricity, Narrows Project operations under Alternative 2 would not conflict with the GHG Reduction Plan and there would be a **less than significant** impact.

15.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact AQ-NP-1: Conflicts with Applicable Air Quality Plan from Construction Activities

Under the No Project Alternative, there would be no YRDP construction and therefore no construction emissions. Therefore, there would be **no impact** on any applicable air quality plans.

YRDP Impact AQ-NP-2: Conflicts with Applicable Air Quality Plan from Operations

YRDP operational impacts would occur from ongoing management plans for the recreational areas in the Project Area. These plans require minimal and intermittent vehicle activity that are already required to implement best management practices and mitigation measures specific to the activity when executed. As shown in Table 15.5-6, there would also be operational emissions from ongoing existing visitor traffic to the recreational areas. These activities and associated emissions are already occurring under the Existing Condition. Impacts would be **less than significant**.

YRDP Impact AQ-NP-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction Activities

Under the No Project Alternative, there would be no YRDP construction and therefore no construction emissions. Therefore, there would be no cumulatively considerable net increase of any criteria pollutant. There would be **no impact**.

YRDP Impact AQ-NP-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

As noted, Yuba County and Nevada County are in nonattainment for ozone and PM10 compared to the state standards. Sierra County is in nonattainment for PM10.

There are ongoing operational and maintenance activities at the existing recreational areas. Visitor data was collected in the 2019 FEIS for the year 2012, which is considered the existing year. Because visitation varies greatly between the peak season (Memorial to Labor Day) and non-peak season (April 15-Memorial Day, Labor Day-October 15), peak daily and non-peak daily emissions are shown separately. In addition to mobile emissions, campfire emissions were calculated. There are currently 106 campsites in total at all the recreational facilities at New Bullards Bar Reservoir. Existing daily emissions for both mobile and campfire sources are shown in Table 15.5-6 It is assumed one bundle of firewood is burned per day per fire ring and that each single, double, and triple campsite has one fire ring while group campsites have four fire rings. See Appendix 15C for operational emissions calculations. As shown in Table 15.5-6, the existing operating condition

would exceed the FRAQMD thresholds of significance for ROG and NOx emissions. This existing condition would not significantly change as a result of the No Project Alternative as the capacity of the recreational areas would remain the same. Operational impacts would be **less than significant**.

Table 15.5-8. Existing Daily Operational Emissions.

	lb/day						metric tons/day		
Year 2012 (existing)	ROG	NOx	CO	SOx	PM10	PM2.5	CO2	CH4	N2O
Non-Peak Season Mobile Emissions	43.68	83.02	1,260.45	1.10	5.25	2.10	50.60	0.00	0.00
Peak Season Mobile Emissions	163.58	308.36	4,684.76	4.10	19.56	7.82	188.43	0.01	0.01
Campfire Emissions	330.10	3.75	364.12	0.58	49.88	49.88	2.22	0.00	0.00
Maximum	**493.68**	**312.11**	**5,048.88**	**4.68**	**69.43**	**57.70**	**190.66**	**0.01**	**0.01**
Feather River AQMD Thresholds	**25**	**25**	**N/A**	**N/A**	**80**	**N/A**	**N/A**	**N/A**	**N/A**
Exceeds Threshold?	**Yes**	**Yes**	**N/A**	**N/A**	**No**	**N/A**	**N/A**	**N/A**	**N/A**

YRDP Impact AQ-NP-5: Expose sensitive receptors to substantial pollutant concentrations

As noted, there are several residences located within one-quarter mile. All other sensitive receptor locations are located beyond the quarter-mile radius of the Proposed Projects Boundary. As there would be no construction emissions in the No Project Alternative, there would be no impact to sensitive receptors from construction emissions. During YRDP operations under the No Project Alternative, there would be minimal emissions from ongoing existing trips for the management plans, visitor vehicle trips, and campfires. These would be spread out and would not be concentrated in any one location for a substantial amount of time. Therefore, impacts to sensitive receptors would be **less than significant**.

YRDP Impact AQ-NP-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Yuba County is in attainment or unclassified for PM2.5, SOx, and CO and Sierra County is in attainment or unclassified for VOC, NOx, PM2.5, SOx, and CO. FRAQMD, which governs Yuba County, and NSAQMD, which governs Sierra County, have both not set a threshold for PM2.5, SOx, and CO. There would be no construction associated with the No Project Alternative. *YRDP Impact AQ-NP-4* shows the emissions for PM2.5, SOx, and CO during the existing condition. This existing condition would not change as a result of the No Project Alternative as the capacity of the recreational areas would remain the same. Operational impacts to other emissions adversely affecting a substantial number of people would be **less than significant**.

YRDP Impact GHG-NP-1: Generation of GHG Emissions from Construction Activities

Under the No Project Alternative, there would be no YRDP construction and therefore no generation of GHG emissions from construction activities. There would be **no impact**.

YRDP Impact GHG-NP-2: Generation of GHG Emissions from Operations

As discussed under *YRDP Impact AQ-NP-2*, there would be minimal GHG emissions from ongoing existing trips for the management plans, visitor vehicle trips, and campfires. Existing GHG emissions from the existing recreational facilities are shown in Table 15.5-6. Existing GHG emissions from the recreational facilities would be relatively unchanged in the No Project Alternative as no additional facilities would be built.

YRDP operations under the No Project Alternative would result in a complete loss of hydropower production which would result in an indirect increase in GHG emissions through replacement power supplies that rely on fossil fuels. This impact would result in an additional 124,834 MTCO2e/year as that is the amount currently offset by YRDP's portion of the hydropower generation (Appendix 15D). Compared to the SMAQMD GHG threshold of 1,100 $MTCO_2e$/year, GHG emissions resulting from YRDP operations under the No Project Alternative would exceed the GHG threshold. Impacts would be **significant and unavoidable.**

YRDP Impact GHG-NP-3: Conflict with a GHG Reduction Plan

Yuba Water has not adopted a GHG Reduction Plan, and existing GHG emissions would be minimal (Table 15.5-6). The indirect impact to GHG emissions would be substantial though as the loss of power generation would be significant and it would be too speculative to predict whether the replacement power would be backfilled with clean energy sources or fossil fuels (*YRDP Impact GHG-NP-2*). This would conflict with California's goal for carbon neutrality as stated in the 2022 Scoping Plan. Impacts would be **significant and unavoidable**.

Narrows Impact AQ-NP-1 Conflict with Applicable Air Quality Plan from Construction:

There would be no construction-related air quality impacts associated with the Narrows Project under the No Project Alternative because there would be no construction associated with the Narrows Project. There would be **no impact**.

Narrows Impact AQ-NP-2: Conflicts with Applicable Air Quality Plan from Operations

Existing non-hydropower Narrows Project operations would not significantly change under the No Project Alternative. Therefore, impacts would be **less than significant**.

Narrows Impact AQ-NP-3: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction

There would be no construction-related air quality impacts associated with the Narrows Project under the No Project Alternative because there would be no construction associated with the Narrows Project. There would be **no impact**.

Narrows Impact AQ-NP-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations

Existing non-hydropower Narrows Project operations would not significantly change under the No Project Alternative. Therefore, impacts would be **less than significant**.

Narrows Impact AQ-NP-5: Expose sensitive receptors to substantial pollutant concentrations

As noted, there are several residences located within one-quarter mile; all other sensitive receptor locations are located beyond the quarter-mile radius of the Proposed Project Boundary. As there would be no construction emissions under the No Project Alternative, there would be no impact to sensitive receptors from these emissions. Existing non-hydropower Narrows Project operations would not significantly change under the No Project Alternative. Therefore, impacts to sensitive receptors would be **less than significant.**

Narrows Impact AQ-NP-6: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

There would be no construction emissions associated with the Narrows Project under the No Project Alternative. Existing non-hydropower Narrows Project operations would not significantly change under the No Project Alternative and therefore would not result in other emissions adversely affecting a substantial number of people. Impacts would be **less than significant.**

Narrows Impact GHG-NP-1: Generation of GHG Emissions from Operations

As described in *Narrows Impact AQ-NP-2*, there would be minimal GHG emissions from ongoing maintenance activities under the No Project Alternative.

Narrows Project operations under the No Project Alternative would result in a complete loss of hydropower production which would result in an indirect increase in GHG emissions through replacement power supplies that rely on fossil fuels. This impact would result in an additional 8,840 MTCO2e/year as that is the amount currently offset by the Narrows Project's portion of the hydropower generation (Appendix 15D). Compared to the SMAQMD GHG threshold of 1,100 $MTCO_2e$/year, GHG emissions resulting from Narrows Project operations under the No Project Alternative would exceed the GHG threshold. Impacts would be **significant and unavoidable.**

Narrows Impact GHG-NP-2: Conflict with a GHG Reduction Plan

Yuba Water has not adopted a GHG Reduction Plan and ongoing maintenance activities would result in minimal GHG emissions. The Narrows Project under the No Project Alternative is adjacent to Nevada County, which published an Energy Action Plan in 2019. The Energy Action Plan aims to reduce energy use throughout the County's facilities and operations by accelerating energy efficiency, water efficiency and renewable energy efforts already underway in Nevada County. While the Narrows Project is owned by Yuba Water and is not a County-owned facility, continuing operations would be consistent with the energy and water goals set in the Energy Action Plan. The indirect impact to GHG emissions would be substantial as the No Project Alternative would cease hydropower generation at the Narrows and it would be too speculative to predict whether the replacement power would be backfilled with clean energy sources or fossil fuels (*Narrows Impact GHG-NP-1*). This would be inconsistent with Nevada County's Energy Action Plan. This would also conflict with California's goal for carbon neutrality as stated in the 2022 Scoping Plan. Impacts would be **significant and unavoidable**.

15.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The following sections describe this analysis for the projects discussed in Section 15.5 above.

Although most of the projects described in Chapter 4 would result in air pollutant and GHG emissions, all projects would be required to implement existing regulations, standard conditions, best management practices, and project-specific mitigation measures (if required) during construction. Most cumulative projects related to maintenance, water management, and habitat restoration would have a minimal impact to air quality and GHG emissions as construction would be limited and temporary and there would not be extensive mobile emissions or new building (area, energy, stationary) emissions in the long term for those types of projects. The Camptonville Biomass Plant and Pumpline Solar Project would have temporary and intermittent construction emissions, but would provide renewable energy in the long term, which decreases reliance on fossil fuels, improves climate resiliency, and would be a benefit to GHG emissions. For this reason, only the limited numbers of projects with the potential to cumulatively impact air quality and greenhouse gas resources are specifically considered qualitatively in the cumulative impacts analysis for air quality and greenhouse gas resources:

- Hydroelectric Projects
    - *Yuba-Bear Hydroelectric Project (YubaBear Project) FERC Project No. 2266 Relicensing, Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310), Lower Drum Hydroelectric Project (FERC No. 14531), and Deer Creek Hydroelectric Project (FERC Project No. 14530) Relicensing*
- Flood Control Projects
    - *NBB Dam ARC Spillway Project (ARC Spillway Project)*
- Forest Restoration Projects
    - *North Yuba Forest Partnership*
    - *Yuba Foothills Healthy Forest ProjectUpper Yuba Headwaters Forest Restoration Project*
    - *`Inimim Forest Restoration Project*
    - *Yuba Roadside Fuel Treatment Project*
- Other Local Projects in the Yuba Region
    - *Yuba City Boat Ramp Sediment Removal Project (Yuba City Boat Ramp Project)*

These projects are described in Chapter 4 and qualitatively addressed below.

15.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

Air Quality

The geographic area of analysis of cumulative impacts for air quality includes the Project site, immediate vicinity for toxic air contaminants, and Sacramento Valley Air Basin and Mountain Counties Air Basin for regional criteria air pollutants. Table 4.9-1, Cumulative Project List, describes known past, present, and reasonably foreseeable future projects that may affect air quality both at the local and regional scale. Construction-related cumulative impacts are qualitatively analyzed for the ARC Spillway Project, Yuba City Boat Ramp Sediment Removal Project, and forest restoration projects.

Nonattainment of air pollutant standards is considered a cumulatively significant impact. As previously discussed, Yuba County is designated as federal attainment for all NAAQS and state nonattainment for ozone and PM10 for the CAAQS (Table 15.2 2). Sierra County is designated as federal attainment for all NAAQS and state nonattainment for PM10 for the CAAQS (Table 15.2 3). Both FRAQMD and NSAQMD have set thresholds for ROG, NOx, and PM10 for construction and operational emissions.

As previously analyzed, YRDP construction impacts were determined to be less than significant with incorporation of mitigation measures AQ-1 and AQ-2. Operational emissions were significant and unavoidable due to no feasible mitigation measures for the ROG emissions from campfires. Due to the nonattainment statuses and range of projects occurring in the same timeframe as the Proposed Projects, there would be an existing significant cumulative impact. YRDP's incremental contribution to air quality would be cumulatively considerable as the ROG emissions would exceed the FRAQMD threshold of significance. ROG is a precursor for ozone, for which Yuba County is in state nonattainment. Other cumulative projects including the ARC Spillway Project and Yuba City Boat Ramp Sediment Removal Project that would have the potential to generate air pollutant emissions would be subject to the same existing regulations, standard conditions, and best management practices enforced by the applicable air district.

The ARC Spillway Project found potentially significant impacts during construction and implemented mitigation to include construction best practices and a NOx mitigation fee. However, residual PM10 emissions were significant and unavoidable. The ARC Spillway Project had a less than significant impact during operations to air quality with no mitigation required.

The Yuba City Boat Ramp Sediment Removal Project would involve dredging up to 315,600 CY, which would cause an exceedance of NOx emissions even with implementation of a construction mitigation measure requiring use of Tier 3 equipment. This would be a significant and unavoidable impact.

The forest restoration projects would include prescribed burning in order to reduce the biomass available for a wildfire thereby reducing fire risk. Prescribed fires would be smaller in scale and more controlled compared to a wildfire. With a smaller burn footprint, air pollutant emissions of ROG, NOx, and PM that are emitted during a fire should be less than the quantity of emissions burned in a wildfire. Nonetheless, these prescribed fires would contribute to ROG, NOx, and PM

emissions to a larger scale compared to the campfire emissions emitted for the Proposed Projects in areas of nonattainment for ozone and PM10 (Yuba County) and PM10 (Sierra County).

Therefore, under the Cumulative Condition, including the Proposed Projects, there would be a significant cumulative impact on air quality.

GHG

Impacts related to GHG emissions are inherently cumulative, as a single project alone would have at most a minimal impact on climate change. Because the ARC Spillway Project and Yuba City Boat Ramp Sediment Removal Project may result in substantial construction activities including haul truck trips and operation of heavy-duty construction equipment, these projects would contribute to increased GHG emissions. Construction GHG impacts for the ARC Spillway Project were found to also be potentially significant but were mitigated to less than significant. The Yuba City Boat Ramp Sediment Removal Project would result in potentially significant GHG emissions during construction, but because these emissions would cease after construction, the impact was found to be less than significant. The forest restoration projects would include prescribed burns which would release CO2 emissions, but this would be less than the potential CO2 emissions emitted from an uncontrolled wildfire so the net effect would be beneficial to GHG emissions.

The aggregate impact of multiple projects emitting GHG emissions would make a more significant contribution to climate change. Therefore, the findings related to the Proposed Projects' GHG emissions would serve as the cumulative impact to GHG emissions as well. As previously analyzed, the Proposed Projects would result in less power generation compared to the existing condition. Mobile emissions would become more fuel efficient over time as vehicles transition to electric rather than gas or diesel, but this would be outweighed by the loss in power generation and resulting potential increase in GHG emissions.

Therefore, under the Cumulative Condition, including the Proposed Projects, there would be a significant cumulative GHG emissions impact.

YRDP Cumulative Impact AQ-PP-1: Potential for significant cumulative air quality impact resulting from the YRDP.

As explained above, under the cumulative condition, including the Proposed Projects, the cumulative impact to air quality would be significant. Proposed YRDP Project operations would have a cumulatively considerable incremental contribution to that impact due to ROG emissions associated with campfires. As explained above for YRDP Impact AQ-PP-2, there is no feasible mitigation available to reduce ROG emissions. Accordingly, the Proposed YRDP Project would have a **significant and unavoidable cumulative impact** on air quality.

YRDP Cumulative Impact GHG-PP-1: Potential for significant cumulative GHG impact resulting from the YRDP.

As explained above, under the cumulative condition, including the Proposed Projects, the cumulative GHG impacts would be significant. The Proposed YRDP Project would cause a cumulatively considerably incremental contribution to that impact due to the direct GHG

emissions from proposed YRDP construction activities and the indirect GHG emissions from reduced hydropower generation. As explained above under YRDP Impact GHG-PP-1 and YRDP Impact GHG-PP-2, there is no feasible mitigation available to reduce direct and indirect GHG emissions. Accordingly, the Proposed YRDP Project would have a **significant and unavoidable cumulative impact** due to GHG emissions.

Narrows Cumulative Impact AQ-PP-1: Potential for significant cumulative air quality impact resulting from the Narrows Project.

As explained above, under the cumulative condition, including the Proposed Projects, the cumulative impact to air quality would be significant. As explained in Section 15.5 above, however, the Proposed Narrows Project would involve no construction emissions and only minimal air pollutant emissions relative to the Existing Condition. Accordingly, the Proposed Narrows Project would not have a cumulatively considerable incremental contribution to the cumulative air quality impact and would have a **less than significant cumulative impact** to air quality.

Narrows Cumulative Impact GHG-PP-1: Potential for significant cumulative GHG impact resulting from the Narrows Project.

As explained above, under the cumulative condition, including the Proposed Projects, the cumulative GHG impact would be significant. However, as explained in Section 15.5 above, under the Proposed Narrows Project, the non-hydropower Narrows Project operations would not have significantly different GHG emissions relative to the Existing Condition and the change in Narrows Project hydropower generation would be relatively minor. Accordingly, the Proposed Narrows Project would not have a cumulatively considerable incremental contribution to the cumulative GHG emissions impact and would have a **less than significant cumulative impact** due to GHG emissions.

15.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Cumulative impact determinations are presented below and are based upon consideration of the impacts of Alternative 1, in combination with other reasonably foreseeable projects, relative to the Existing Condition. Alternative 1 would have cumulative impacts for air quality and GHG impacts similar to those described in Section 15.6.1 for the Proposed Projects because Alternative 1 does not change the air pollutant and direct GHG emissions from the Proposed Projects and the same cumulative projects are considered. With regard to indirect GHG emissions, Alternative 1 includes some flow-based differences that result in differences in hydropower generation compared to the Proposed Projects; however, these differences do not materially alter the analysis and conclusions in Section 15.6.1. Similarly, Alternative 1 would impact power production at Yuba-Bear and Drum-Spaulding relicensing projects, but this also would not significantly change the analysis and conclusions in Section 15.6.1. Accordingly, under the Cumulative Condition, including Alternative 1, there would be significant cumulative air quality and GHG impacts.

YRDP Cumulative Impact AQ-Alt1-1: Potential for significant cumulative air quality impact resulting from the YRDP.

As explained above, under the cumulative condition, including Alternative 1, the cumulative impact to air quality would be significant. YRDP operations under Alternative 1 would have a cumulatively considerable incremental contribution to that impact due to ROG emissions associated with campfires. As explained above for YRDP Impact AQ-Alt1-2, there is no feasible mitigation available to reduce ROG emissions. Accordingly, YRDP activities under Alternative 1 would have a **significant and unavoidable cumulative impact** on air quality.

YRDP Cumulative Impact GHG-Alt1-1: Potential for significant cumulative GHG impact resulting from the YRDP.

As explained above, under the cumulative condition, including Alternative 1, the cumulative GHG impacts would be significant. YRDP construction and operations under Alternative 1 would cause a cumulatively considerably incremental contribution to that impact due to the direct GHG emissions from proposed YRDP construction activities and the indirect GHG emissions from reduced hydropower generation. As explained above under YRDP Impact GHG-Alt1-1 and YRDP Impact Alt1-2, there is no feasible mitigation available to reduce direct and indirect GHG emissions. Accordingly, YRDP construction and operations under Alternative 1 would have a **significant and unavoidable cumulative impact** due to GHG emissions.

Narrows Cumulative Impact AQ-Alt1-1: Potential for significant cumulative air quality impact resulting from the Narrows Project.

As explained above, under the cumulative condition, including Alternative 1, the cumulative impact to air quality would be significant. As explained in Section 15.5 above, however, Alternative 1 includes no Narrows Project construction and only minimal Narrows Project operational air pollutant emissions relative to the Existing Condition. Accordingly, Narrows Project operations under Alternative 1 would not have a cumulatively considerable incremental contribution to the cumulative air quality impact and would have a **less than significant cumulative impact** to air quality.

Narrows Cumulative Impact GHG-Alt1-1: Potential for significant cumulative GHG impact resulting from the Narrows Project.

As explained above, under the cumulative condition, including Alternative 1, the cumulative GHG impact would be significant. However, as explained in Section 15.5 above, under Alternative 1, the non-hydropower Narrows Project operations would not have significantly different GHG emissions relative to the Existing Condition and the change in Narrows Project hydropower generation would be relatively minor. Accordingly, Narrows Project operations under Alternative 1 would not have a cumulatively considerable incremental contribution to the cumulative GHG emissions impact and would have a **less than significant cumulative impact** due to GHG emissions.

15.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Cumulative impact determinations are presented below and are based upon consideration of the impacts of Alternative 2, in combination with other reasonably foreseeable projects, relative to the Existing Condition. Alternative 2 would have cumulative impacts for air quality and GHG impacts similar to those described in Section 15.6.1 for the Proposed Projects because Alternative 2 does not change the air pollutant and direct GHG emissions from the Proposed Projects and the same cumulative projects are considered. With regard to indirect GHG emissions, Alternative 2 includes some flow-based differences that would generally decrease hydropower generation beyond what would occur under the Proposed Projects but would not otherwise materially alter the analysis and conclusions in Section 15.6.1. Accordingly, under the Cumulative Condition, including Alternative 2, there would be significant cumulative air quality and GHG impacts.

YRDP Cumulative Impact AQ-Alt2-1: Potential for significant cumulative air quality impact resulting from the YRDP.

As explained above, under the cumulative condition, including Alternative 2, the cumulative impact to air quality would be significant. YRDP operations under Alternative 2 would have a cumulatively considerable incremental contribution to that impact due to ROG emissions associated with campfires. As explained above for YRDP Impact AQ-Alt2-2, there is no feasible mitigation available to reduce ROG emissions. Accordingly, YRDP activities under Alternative 2 would have a **significant and unavoidable cumulative impact** on air quality.

YRDP Cumulative Impact GHG-Alt2-1: Potential for significant cumulative GHG impact resulting from the YRDP.

As explained above, under the cumulative condition, including Alternative 2, the cumulative GHG impacts would be significant. YRDP construction and operations under Alternative 2 would cause a cumulatively considerably incremental contribution to that impact due to the direct GHG emissions from proposed YRDP construction activities and the indirect GHG emissions from reduced hydropower generation. As explained above under YRDP Impact GHG-Alt2-1 and YRDP Impact GHG-Alt2-2, there is no feasible mitigation available to reduce direct and indirect GHG emissions. Accordingly, YRDP construction and operations under Alternative 2 would have a **significant and unavoidable cumulative impact** due to GHG emissions.

Narrows Cumulative Impact AQ-Alt2-1: Potential for significant cumulative air quality impact resulting from the Narrows Project.

As explained above, under the cumulative condition, including Alternative 2, the cumulative impact to air quality would be significant. As explained in Section 15.5 above, however, Alternative 2 includes no Narrows Project construction and only minimal Narrows Project operational air pollutant emissions relative to the Existing Condition. Accordingly, Narrows Project operations under Alternative 2 would not have a cumulatively considerable incremental contribution to the cumulative air quality impact and would have a **less than significant cumulative impact** to air quality.

Narrows Cumulative Impact GHG-Alt2-1: Potential for significant cumulative GHG impact resulting from the Narrows Project.

As explained above, under the cumulative condition, including Alternative 2, the cumulative GHG impact would be significant. However, as explained in Section 15.5 above, under Alternative 2, the non-hydropower Narrows Project operations would not have significantly different GHG emissions relative to the Existing Condition and the change in Narrows Project hydropower generation would be relatively minor. Accordingly, Narrows Project operations under Alternative 2 would not have a cumulatively considerable incremental contribution to the cumulative GHG emissions impact and would have a **less than significant cumulative impact** due to GHG emissions.

15.6.4 No Project Cumulative Condition compared to the Existing Condition

Air Quality

As explained in Section 15.5, the No Project Alternative would not include any construction activities and would not significantly change non-hydropower YRDP and Narrows Project operations relative to the Existing Condition. As a result, the No Project Alternative would not meaningfully increase air pollutant emissions in a manner that would contribute to a significant cumulative air quality impact.

GHG

The cumulative condition for the No Project Alternative would include the same past, present, and future cumulative projects discussed for the Proposed Projects in Section 15.6.1. Additionally, under the No Project Alternative, all hydropower generating YRDP and Narrows Project would cease, resulting in a complete loss of hydropower from those facilities. The complete loss of YRDP and Narrows Project hydropower would result in substantial GHG emissions due to increased reliance on alternative sources of energy. Accordingly, under the Cumulative Condition, including the No Project Alternative, there would be a significant cumulative GHG emissions impact.

YRDP Cumulative Impact GHG-NP-1: Potential for significant cumulative GHG emissions resulting from the YRDP

As explained above, under the cumulative condition, including the No Project Alternative, the cumulative GHG impacts would be significant. Under the No Project Alternative, YRDP operations would cause a cumulatively considerably incremental contribution to that impact due to the indirect GHG emissions from the complete reduction in hydropower generation. There is no feasible mitigation available to reduce these GHG emissions. Accordingly, YRDP operations under the No Project Alternative would have a **significant and unavoidable cumulative impact** due to GHG emissions.

Narrows Cumulative Impact GHG-NP-1: Potential for significant cumulative GHG emissions resulting from the Narrows Project

As explained above, under the cumulative condition, including the No Project Alternative, the cumulative GHG impacts would be significant. Under the No Project Alternative, Narrows Project operations would cause a cumulatively considerably incremental contribution to that impact due to the indirect GHG emissions from the complete reduction in hydropower generation. There is no feasible mitigation available to reduce these GHG emissions. Accordingly, Narrows Project operations under the No Project Alternative would have a **significant and unavoidable cumulative impact** due to GHG emissions.

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Yuba Water. See Yuba County Water Agency.

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CHAPTER 16

GEOLOGY AND SOILS

16.1 Introduction

This chapter describes the environmental setting and regulatory framework for geology and soils, and it identifies direct, indirect and cumulative impacts of the Proposed Projects during construction and as a result of O&M. The analysis focuses on the geological and soil characteristics in the Project Area and the impacts related to these characteristics as a result of construction and operations. Paleontological resources and impacts on these resources are also discussed. The geographic extent of the environmental setting considered for geology and soils refers to the Project Area.

16.2 Environmental Setting

16.2.1 Topography and Regional Geology

Geologic units within Yuba County as mapped by the California Geological Survey (CDMG 1992) are separated into three categories that roughly correspond with the valley, foothills, and mountain regions of Yuba County, proceeding west to east. These geologic units were described in the Yuba County 2030 General Plan Draft EIR, as summarized below (Yuba County 2011) and shown in Figure 16.21:

Tertiary and Quaternary Alluvial Deposits

The majority of the western, valley portion of the county is underlain by Tertiary and Quaternary alluvium, including artificial fill, dredge, or mine tailings, natural levee and channel deposits, basin deposits, landslide deposits, lake, fan, and terrace deposits.

This alluvial material includes poorly sorted stream and basin deposits ranging from clay to boulder sized. Named units include Pleistocene-aged deposits of the Modesto and riverbank formations, which are alluvial terrace and fan deposits of gravel, sand, silt, and clay. Older alluvial deposits include Pliocene-aged laguna formation deposits of interbedded alluvial gravel, sand, and silt; as well as Eocene-aged auriferous (gold-bearing) gravels along the Yuba River.

Aquifers in the North and South Yuba basins are comprised of these continental alluvial deposits. The cumulative thickness of the aquifer units increases from a few hundred feet near the Sierra Nevada foothills to over 1,400 feet along the western margin of the basin. The base of the aquifer system overlies the Pretertiary metamorphosed igneous and sedimentary rocks of the Sierra Nevada block.

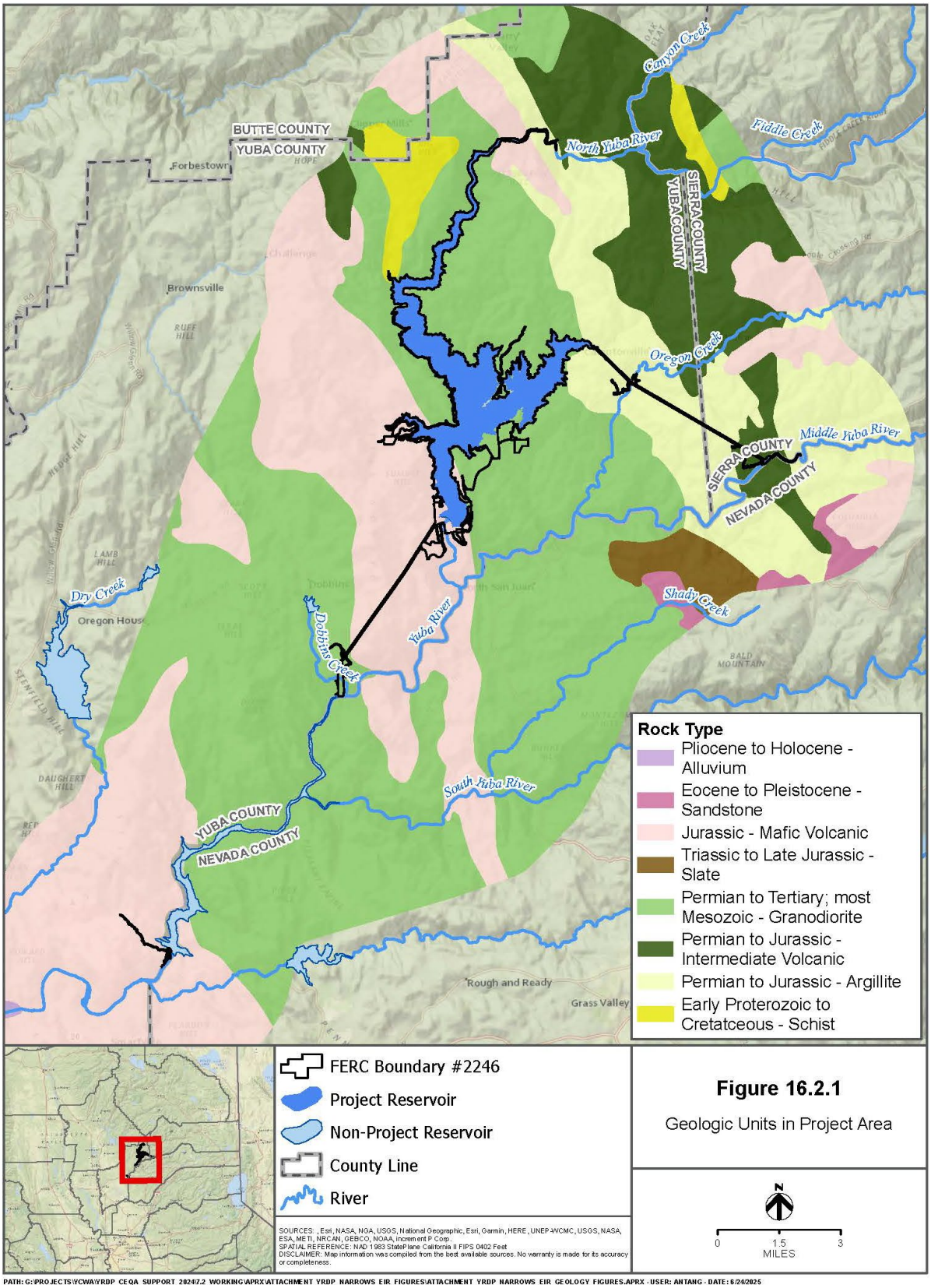

Figure 16.2-1. Geologic Units in Project Area.

Smartsville Complex

The Smartsville complex is located in the foothills area in the central portion of Yuba County. The complex consists of a volcanic arc assemblage of sedimentary, volcanic, and plutonic rocks. This material includes marine sandstone, conglomerate, slate, siltstone, and Jurassic-aged volcanic rocks. Other rocks of the Smartsville complex include volcanic diorite and tonalite, mafic and felsic dikes, gabbro, diabase, and ultramafic rocks. The ultramafic rocks of the Smartsville Complex are partly to completely serpentinized and potentially contain asbestos.

Central Belt

The Central Belt of the Sierra Nevada includes plutonic rocks (granite and granitic rocks) of Jurassic and Cretaceous age, as well as a complex assemblage of metamorphic rocks of Paleozoic and Mesozoic (Triassic and Jurassic) age. The metamorphic rocks include metasedimentary and metavolcanic rocks, and potentially asbestos-bearing ultramafic rocks.

The bedrock geology in the Project Area is composed primarily of Paleozoic and Mesozoic igneous rocks such as gabbro and granodiorite, volcanic rocks, and metamorphosed sediments and volcanic rocks. In addition, volcanic eruptions in the Tertiary period deposited lava, mudflows, pyroclastic flows, and ash throughout the Yuba River Basin. The bedrock of the New Bullards Bar Dam flood control structure consists of volcanic deposits from the Jurassic period. Gold deposits in the region formed in the Mesozoic period when hot magma intruded and metamorphosed the folded sedimentary rocks. The uplift of the region during the Tertiary period led to erosion and exposed these gold veins (FERC 2019).

The major physiographic feature within the Proposed Project Vicinity is the Sierra Nevada Range, which is approximately 400 miles long and runs south-southeast to north-northwest in eastern California. The Sierra Nevada crest forms the eastern limit of the Yuba River Basin. Downfaulting of the eastern Sierra face has affected drainage evolution by capturing headwater streams and creating channels that now have east-facing headwaters. The uplifting and tilting of the Sierra block reorganized drainage networks and initiated a period of sustained channel incision; many of the modern channels have elevations below the Tertiary period channels. These ancestral deep channels drained north-northwest across modern drainages. The ancient channels were filled with gold-rich material that was heavily mined in the late 1800s (FERC 2019).

Tertiary channels/gravels were buried first by rhyolitic and then by andesitic volcanic rocks and subsequently were severely eroded and exposed by deep fluvial incision. The modern Yuba River began incising the local geography approximately five million years ago, and modern foothill channels strike perpendicular to ancient channels, leaving the deposits of these ancient channels as upland gravels. The Yuba River Basin was also affected by extensive glacial erosion over the last two million years (FERC 2019).

The current Yuba River Basin drains the northwestern Sierra Nevada through a series of deep canyons cut by mountain streams, separated by high, steep-sided ridges and a parallel drainage network. The parallel drainage network results in narrow valleys, small tributary contributing areas, and low tributary sediment loads under natural conditions. Prehistoric debris fans at tributary junctions did not commonly form. Stratigraphic evidence indicates the presence of stepped terraces

resulting from glaciation, similar to piedmont channels flowing from the Sierra Nevada, but most of these terraces are buried by mining sediment (FERC 2019).

Major deposits of aggregate resources and gold deposits both occur in the valley along the lower Yuba River (Yuba County 2011). The Yuba Goldfields encompasses approximately 7,000 acres and are located approximately 10 miles northeast of Marysville along the lower Yuba River.[1] In the twentieth century, a series of mining companies reprocessed the slickens, extracting gold that was increasingly difficult to separate from the gravel. By the 1970s, it was economically impossible to retrieve any more gold, and the debris became a source of aggregate, an essential ingredient of concrete.[2]

16.2.2 Faults and Seismicity

Yuba County is located within an area of California with low seismic activity and is not located with a highly active fault zone (Yuba County 2011). Seismic activity may result in geologic and seismic hazards, including seismically induced fault displacement and rupture, ground shaking, liquefaction, lateral spreading, landslides, and structural hazards (Yuba County 2011). Figure 16.2-2 shows the location of known faults in Yuba County, and the fault systems and associated seismic hazards are described below.

The Alquist-Priolo Earthquake Fault Zoning Act, discussed further below in Section 16.3, directed the State Geologist to establish regulatory zones known as Earthquake Fault Zones. These zones identify areas where there may be an elevated risk of earthquake-triggered ground failure, which are used to assist public agencies in assessing the geologic setting of a project. Within the Project Area, there are no Alquist-Priolo fault zones.

While there are no zones of required investigation in the Project Area, there are faults within the Project Area that are inactive. Tectonic plate collisions in the Paleozoic and Mesozoic periods resulted in faults in the vicinity of the Project Area. The New Bullards Bar Reservoir is transected by the Big Bend Wolf Creek Fault Zone that trends north-northwest to south-southeast through the reservoir area. Additional faults lie to the east of this fault zone. Faults within the Project Area are inactive. Potentially active faults closest to the New Bullards Bar Dam are the Little Grass Valley Fault and the Cleveland Hill Fault, located 18 miles and 19 miles from the dam, respectively (FERC 2019).

Of these potential seismic sources, the controlling fault is the Little Grass Valley Fault, with a maximum credible earthquake magnitude of 6.75 approximately 15 miles from the dam that is estimated to occur once in 2,500 years. The estimated median horizontal peak bedrock acceleration at the site from a maximum credible earthquake on this source is 0.12 gram. A random "minimum earthquake" would have a magnitude of 6.25 with a duration of 14 seconds and a peak horizontal acceleration of 0.15 grams at the median level and 0.2 grams at the 84th percentile (FERC 2019).

[1] https://www.trlia.org/projects/yuba_goldfields_100_yr.php
[2] https://earthobservatory.nasa.gov/images/5522/yuba-goldfields-california

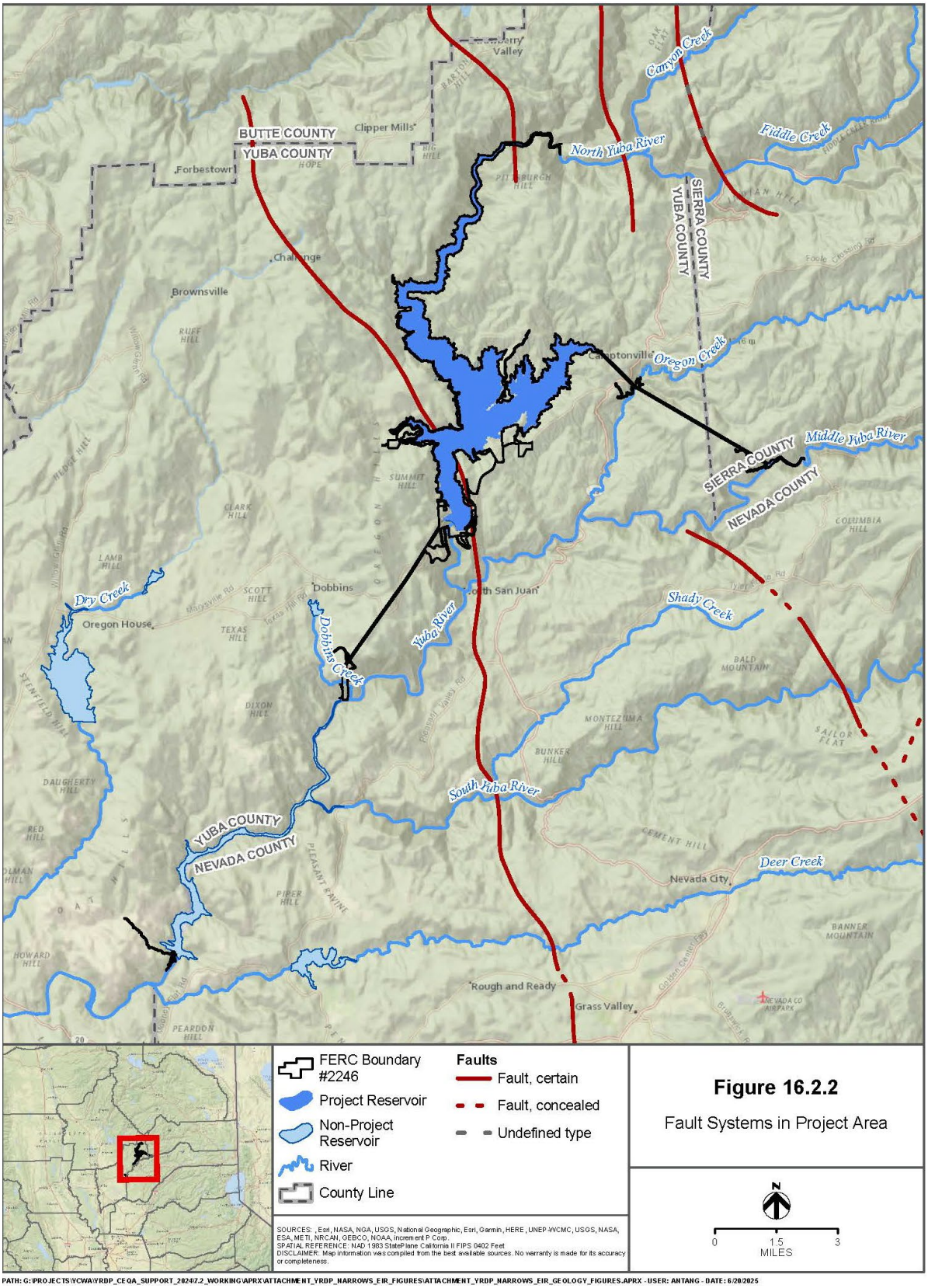

Figure 16.2-2. Fault Systems in Project Area

16.2.2.1 Liquefaction

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. The soils most susceptible to liquefaction are clean, uniformly graded, loose, saturated, fine-grained sands. The liquefaction of soils can cause them to move laterally outward from buildings, roads, and other structures. Damage is usually greatest to large or heavy structures on shallow foundations and takes the form of cracking, tilting, and differential settlement. There are no Zones of Required Investigation for liquefaction identified in the Project Area (Yuba County 2011).

16.2.2.2 Slope Failure and Landslides

Slope failure can occur either as rapid movement of large masses of soil – a "landslide" - or slow, continuous movement – a "creep." Landslides are commonly triggered by unusually high rainfall and the resulting soil saturation, by earthquakes, or a combination of these conditions. Landslides occur when shear stresses within a soil or rock mass exceed the available shear strength of the mass. Failure may occur when stresses that act on a slope increase, internal strength of a slope decreases, or a combination of both. Increased stresses can be caused by an increase in weight of the overlying slope materials (by saturation), addition of material (surcharge) to the slope, application of external loads (e.g., foundation loads), or seismic loading (application of an earthquake-generated agitation to a structure) (DWR 2022).

On a smaller scale, gently sloping ground along riverbanks or exposed embankments can undergo horizontal displacement, a phenomenon known as lateral spreading. Slope soil shear strength (the internal resistance of a soil to shear stress) can be reduced through erosion or undercutting or removal of supporting materials at the slope toe as a result of scouring (concentrated erosion by streamflow), increased pore water pressure within the slope, and weathering or decomposition of supporting soil. Zones of low shear strength within the slope are associated with the presence of certain clay, bedding, or fracture surfaces (DWR 2022).

Water-saturated, loosely consolidated soils and precipitation events increase the likelihood that an earthquake will trigger landslides, slope failure, or lateral spreading. Areas most prone to lateral spreading are those that consist of fill material that has been improperly engineered, that have steep, unstable banks, and that have high groundwater tables. There are no Zones of Required Investigation for landslides identified in the Project Area (Yuba County 2011).

16.2.3 Soils

Soil associations in the Project Area consist predominantly of the Musick-Holland-Hoda-Chaix series, followed by the Woodleaf-Surnuf-Sites-Mariposa series (FERC 2019). Within each series there are a variety of soil types, each type varying in characteristics such as content, slope, and drainage capacity, among others. Because there are many soil types within the Project Area, what follows is a general description of soils within each soil series.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, 46 soil map units are present within a 500-foot buffer of the Project Area. The identified soil units, as well as several key characteristics related to this analysis, are shown in Table 16.2-1.

Table 16.2-1. Soils in Project Area

Soil Map Unit Name	Shrink-Swell Potential	Erosion Potential
Argovar silt loam, 0 to 5 percent slopes	High	Low
Auburn-Sobrante-Rock outcrop complex, 50 to 75 percent slopes	Low	Moderate
Auburn-Sobrante complex, gravelly, 15 to 30 percent slopes	Moderate	Moderate
Auburn-Sobrante complex, gravelly, 30 to 50 percent slopes	Low	Moderate
Auburn-Sobrante complex, gravelly, 8 to 15 percent slopes	Moderate	Moderate
Boomer-Boomer variant-Sites complex, 2 to 30 percent slopes	Moderate	Low
Boomer-Pendola-Sites complex, 2 to 30 percent slopes	Moderate	Low
Boomer-Pendola-Sites complex, 30 to 50 percent slopes	Low	Low
Boomer-Pendola complex, 50 to 75 percent slopes	Moderate	Low
Chaix-Chawanakee-Hotaw complex, 30 to 50 percent slopes	Low	Low
Chawanakee-Chaix-Hotaw complex, 30 to 75 percent slopes	Low	Low
Deadwood-Rock outcrop-Hurlbut complex, 30 to 70 percent slopes	Low	Low
Dumps, Landfills	N/A	N/A
Dumps, Mine Tailings	N/A	N/A
Flanly-Rock outcrop complex, 50 to 75 percent slopes	Low	Moderate
Flanly sandy loam, 15 to 30 percent slopes	Moderate	Moderate
Flanly sandy loam, 3 to 8 percent slopes	Moderate	Moderate
Flanly sandy loam, 8 to 15 percent slopes	Moderate	Moderate
Hoda-Musick complex, 2 to 30 percent slopes	Moderate	Low
Hoda-Musick complex, 30 to 50 percent slopes	Moderate	Low
Hoda-Rock outcrop complex, 50 to 75 percent slopes	Moderate	Low
Hoda loam, 30 to 50 percent slopes	Moderate	Low
Holland-Hoda-Hotaw complex, 2 to 30 percent slopes	Moderate	Low
Holland-Hoda-Hotaw complex, 30 to 50 percent slopes	Moderate	Low
Holland sandy loam, 30 to 50 percent slopes	Moderate	Low
Hotaw sandy loam, 30 to 50 percent slopes	Moderate	Low
Hurlbut-Deadwood-Rock outcrop complex, 30 to 75 percent slopes	Low	Moderate
Jocal-Sites-Mariposa complex, 2 to 30 percent slopes	Moderate	Low
Jocal-Sites-Mariposa complex, 30 to 50 percent slopes	Moderate	Low
Josephine-Mariposa complex, 50 to 75 percent slopes, eroded	Moderate	Low
Mariposa-Jocal complex, 30 to 75 percent slopes	Low	Low
Mariposa-Maymen complex, 50 to 75 percent slopes, eroded	Moderate	Low
Mariposa-Rock outcrop complex, 50 to 75 percent slopes	Low	Moderate
Mariposa gravelly loam, 30 to 50 percent slopes	Low	Moderate
Sites-Jocal-Mariposa complex, 30 to 50 percent slopes	Moderate	Low
Sites-Jocal complex, 2 to 30 percent slopes	Moderate	Low
Sites gravelly loam, 15 to 30 percent slopes	Low	Moderate
Sites gravelly loam, 30 to 50 percent slopes	Moderate	Low
Sites gravelly loam, bedrock substraum, 30 to 50 percent slopes	Moderate	Low
Sites loam, 3 to 8 percent slopes	Low	Low
Sites loam, 8 to 15 percent slopes	Low	Moderate
Sites very stony loam, 2 to 15 percent slopes	Moderate	Low
Sobrante-Timbuctoo complex, 30 to 50 percent slopes	Moderate	Moderate
Surnuf cobbly loam, 15 to 30 percent slopes	Moderate	Low
Surnuf cobbly loam, 30 to 50 percent slopes	Moderate	Low

Source: Natural Resources Conservation Service 20xx

Soils in the Musick-Holland-Hoda-Chaix series all come from material weathered from granodiorite. Most soils in this series are very deep, well-drained soils except for soils in the Chaix series, which are moderately deep and somewhat excessively drained. The Woodleaf-Surnuf-Sites-Mariposa series contain a greater variety of soil types, with the one commonality being that all these soils are well drained. Woodleaf soils are moderately deep soils from material weathered from ultramafic rock. Surnuf soils are very deep soils from material weathered from granodiorite. Sites soils are deep to very deep soils from material weathered from metamorphic rock. Mariposa soils are shallow or moderately deep soils, also from material weathered from metamorphic rock (SCS 1998).

Expansive soils have the potential to experience a relative change in volume with changes in moisture. This potential, also referred to as the "shrink-swell" potential, is the extent to which a soil shrinks as it dries out and swells as it gets wet. This extent is influenced by the amount and type of clay in the soil. The shrinking and swelling of soils can cause damage to building foundations, roads, and other structures. A high shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having a high rating (Yuba County 2011). Of the 46 soil map units identified in the Project Area, 28 have a moderate shrink-swell potential. 1 soil map unit, identified as "Argovar silt loam, 0 to 5 percent slopes" has a high shrink-swell potential. This soil is located approximately 3 miles southwest of the Bullards Bar Reservoir in the New Colgate Power Tunnel.

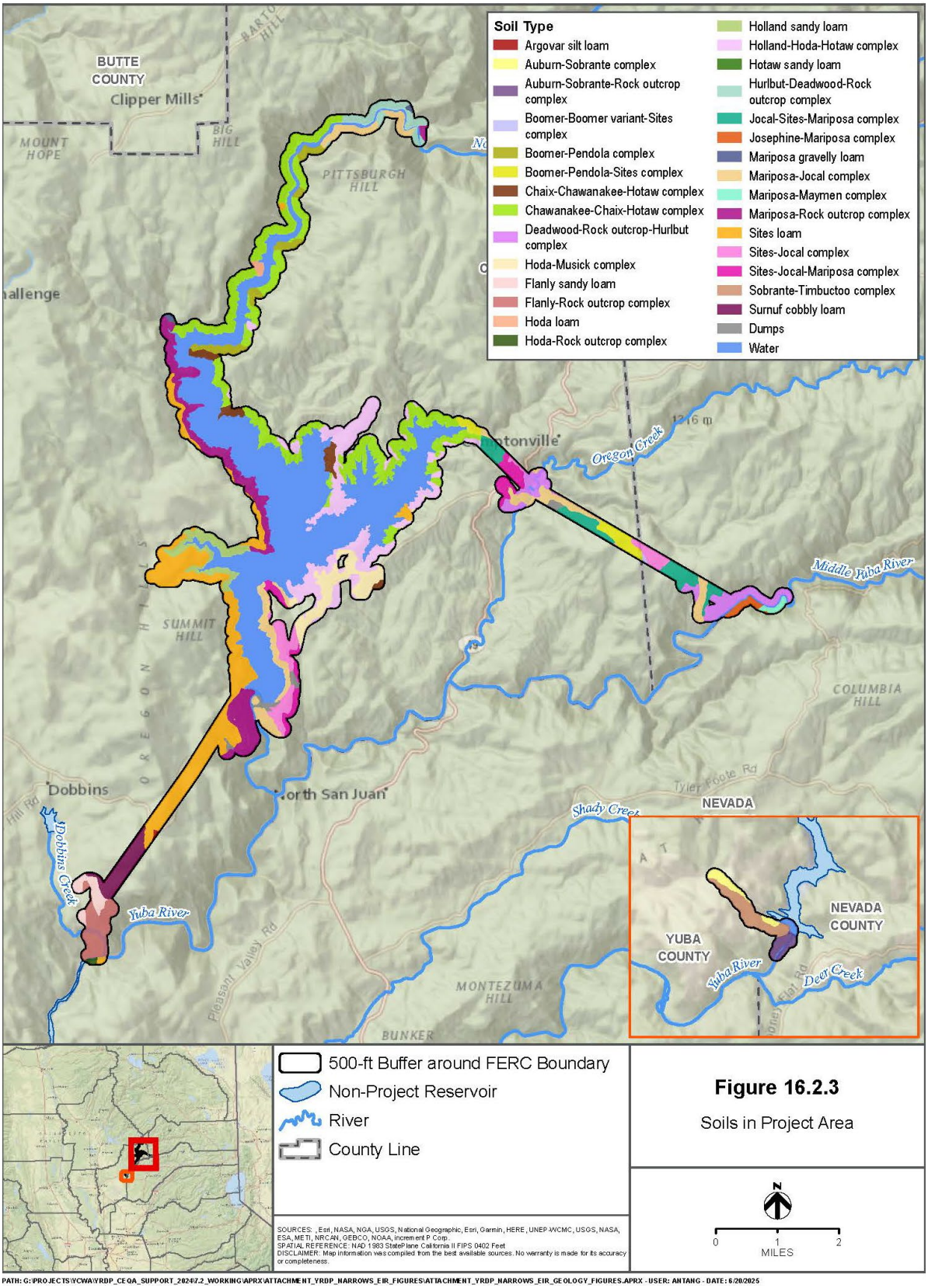

Figure 16.2-3. Soils in Project Area.

16.2.4 Paleontological Resources

Paleontological resources are defined as the fossilized remains of vertebrate and invertebrate organisms, fossil tracks, and plant fossils. In California, paleontological resources are typically observed in sedimentary and metasedimentary deposits. Because the Project Area is composed primarily of igneous rocks, volcanic rocks, metamorphosed sediments and volcanic rocks, paleontological resources are not anticipated to be encountered. Additionally, there are no recorded vertebrate fossil sites within Yuba County (Yuba County 2011). A search of the database of the UC Museum of Paleontology found records of four vertebrate fossils in Nevada County and only one in Sierra County. None of these fossils were found within the Project Area (UC Museum of Paleontology 2024).

16.2.5 Unique Geologic Features

Unique geologic features are typically considered to be natural landforms that are distinctive within the surrounding landscape. Examples of unique geologic features may include landforms such as scenic rivers, gorges, waterfalls, lava fields, glaciers, and rock outcroppings. Within the Project site, the Yuba River and surrounding gorges may be considered unique geologic features, but they are not officially designated. Past construction activities, such as the construction of the New Bullards Dam, have resulted in substantial alterations to these unique geologic features.

16.2.6 Naturally Occurring Asbestos

Naturally occurring asbestos with ultramafic rock has been located within portions of Yuba and Nevada County. Disturbing these geologic units has the potential to create a hazardous condition during construction activities by the release of asbestos fibers that could be subsequently inhaled. Asbestosis and some cancers have been linked to asbestos exposure.

Previous studies have been conducted by the California Geological Survey to determine the general location of areas that are more likely to contain naturally occurring asbestos (California Geological Survey 2000). The Project Area is not located in any of these areas identified by the California Geological Survey.

16.2.7 Sediment Processes

As outlined in the 2019 FEIS, geologic and soil conditions in the Project Area are defined by sediment processes. In describing the sediment processes within the Project Area, the following terms are relevant (FERC 2019):

- A **transport-dominated** reach is defined as part of the river characterized as having the ability to convey the incoming sediment through the reach with only limited storage and additional erosion.
- Conversely, a **response** reach is characterized as a part of the river where stream energy drops, creating areas of deposition.

Several factors affect sediment transport versus sediment deposition in a reach, including, but not limited to, flow velocity, sediment supply, and channel morphology. The gradient in transport-

dominated channels is usually high enough to supply the energy to transport available sediment. As a result, sediment does not accumulate in such reaches but is transported through them over time.

16.2.7.1 Sediment Processes in Yuba River Upstream of Englebright Dam

Most river channels upstream of Englebright Dam are transport-dominated. Only a few response reaches exist where sediment is deposited within or adjacent to the channel. The rivers generally flow through resistant parent material with lateral and vertical control provided by bedrock. Gradients range from 1 to 3 percent, and project dams reduce the sediment supply to the respective downstream reaches to varying extents.

However, there are other sources of sediment to create gravel bars and floodplains and to enhance riparian growth in some areas along the river channels. Processes that supply sediment include bank erosion, surface erosion, debris flows and landslides, side channel development, and channel erosion during flood events. Sediment is also supplied by eroding current and residual historic mining deposits and by local placer mining that disturbs the bed and mobilizes previously stored gravel and finer-grained material (e.g., observed on the Middle Yuba River upstream of its confluence with Oregon Creek). Sediment deposition is greater where downstream control is provided by a channel constriction through bedrock that leads to backwater deposition of sand and gravel. Fine-grained sediment storage in the river channels is limited because of the generally low sediment supply and narrow gorge character.

Bedload contributed by tributaries to the North, Middle, and mainstem Yuba River appears to rapidly disperse, as indicated by the absence of alluvial fans near the confluences. Exceptions include Dobbins Creek, Moonshine Creek, Studhorse Canyon, and Nevada Creek that form alluvial fans and bars composed of sand, gravel, cobbles, and boulders at their confluence.

Most sediment transport occurs during large flood events, such as the 1986 and 1997 floods. These high energy flow events disturb and rework floodplain deposits, mid-channel bars, and historical mining material in project-affected reaches. These events also scour sediment from the impoundments of the diversion dams. For example, the 1997 flood exceeded a flow of 20,000 cfs in the Middle Yuba River, scouring some of the sediment from behind Our House and Log Cabin Diversion Dams and transporting the sediment farther downstream.

The following is a summary of sediment processes, provided from the 2019 FEIS, for each river reach potentially affected by the project:

- Middle Yuba River has a coarse-grained and resistant bed and banks along most of its length, with few possibilities of lateral or vertical shifting. Some sediment deposition occurs on the upstream side of bends and within and downstream of long-term depositional areas, but sediment transport is still high, and particles move with high frequency through the river system. Sediment is available to the channel from upstream and side-channel sources and is generally transported at a higher rate than it is replaced.
- North Yuba River and Yuba River upstream of the New Colgate Powerhouse have conditions similar to conditions in the Middle Yuba River (i.e., coarse-grained bed and banks resistant to movement, with storage of sediment in small areas in deep pools, in

velocity shadows, and on lateral bars). Mid-channel bars exist but are rare.

- Oregon Creek also has a higher transport capacity than sediment availability. It also contains sediment storage areas and mobile sediment forming and reforming bedforms, bars, and floodplains.
- Yuba River downstream of the New Colgate Powerhouse has stable river banks, consisting mostly of bedrock and boulders, with only a minor amount of bank erosion, and appears to be accumulating sediment. The long-term bars in this reach (e.g., Rice's, French, and Condemned bars) seem stable, although the channel may shift laterally across the Rice's and French bars as a result of flood flows.

16.2.7.2 Sediment Processes in Yuba River Downstream of Englebright Dam

The Yuba River downstream of Englebright Dam to the Feather River confluence is a single-thread channel approximately 24 miles long. The river corridor is confined in a bedrock canyon in the uppermost 2 miles, then transitions to a wider bedrock valley and, finally, to a wide alluvial valley for the remaining 19 miles. The river has an average channel gradient of 0.16 percent and a mean substrate size of 97 millimeters (i.e., cobble-size material).

Englebright Dam traps nearly all sediment from upstream sources, except for the finest grain sizes (clay, silt) that may remain suspended during high-flow events. Upland sources of sediment to the Yuba River, downstream of Englebright Dam, consist of smaller tributaries and rock from the embankment of the river. Tributaries include Deer Creek, which enters the Yuba River approximately 0.8 miles downstream of Englebright Dam. Rock from the embankment partially originated from the construction of the power facilities, such as the Englebright Dam, and from access roads. In addition, since November 2007, the USACE has been placing gravel in the Yuba River below Englebright Dam to enhance Chinook spawning habitat. To date, approximately 53,000 short tons of gravel have been placed.

Historical hydraulic mining is the source for the majority of the modern alluvium, and the tailings were used to create training berms for much of the lower river corridor. Between 1852 and 1906, an estimated 367 million cubic yards of hydraulic mining debris moved downstream from the upland mining areas of the greater Yuba River Watershed and was deposited in the Yuba River downstream of Englebright Dam, causing aggradation of 26 to 85 feet (Adler, 1980). This massive sedimentation in the channel and floodplains transformed the river into a braided, unstable stream system. Even prior to mining, the river had already been highly altered by sedimentation, agriculture, and engineering projects. Adler (1980) states that by 1906, the supply of hydraulic mining debris from upland areas was mostly depleted and the river channel attained equilibrium by 1940 to a channel morphology similar to its pre-1849 channel configuration (i.e., single stable channel and similar channel elevation). The primary difference between the pre- and post-mining stream channel is that it is now bordered by large cobble berms that constrain the channel width in many sections. Almost 90 percent of the hydraulic mining debris deposited in the Yuba River downstream of Englebright Dam remains today as deposits in the floodplains.

The channel and floodplain of the Yuba River downstream of Englebright Dam are highly connected, resulting in high flows regularly spilling onto the floodplain. The valley corridor is wide, and the river meanders, cutting into the berms and potentially allowing re-incorporation of mining sediment into surface water. Overall, sediment is both eroded and deposited throughout

the lower river valley in a complex spatial pattern, with a net outflux that is large compared to other rivers in the region.

The effects of historical hydraulic mining are particularly significant where the Feather and Yuba Rivers converge near the City of Marysville. At the mouth of the Yuba River at the south edge of Marysville, more than 70 feet of sediment eventually filled the river channel. Upstream of Marysville, historical floods buried entire communities under more than 40 feet of silt and gravel. Sacramento River Flood Control Project levees were constructed along the Feather and Yuba Rivers and their tributaries to prevent flooding of valley communities as well as burial of the communities by sediments washed down from the mountains. The levees were built even higher and designed to confine the floodwaters to a relatively narrow channel that would maintain sufficiently high velocities to efficiently convey sediment through the system, reducing the amount of dredging necessary to maintain navigation. As a result of the levees, Marysville, Olivehurst, and Linda are now many feet below the floodwater levels of the Feather and Yuba Rivers.

16.2.7.3 Dams Affecting Sediment Processes

As outlined in the 2019 FEIS, six dams in the project vicinity affect sediment processes in project-related rivers (FERC 2019):

Our House Diversion Dam

Our House Diversion Dam, located on the Middle Yuba River, is a passive-spillway dam that spills regularly. The dam traps mostly coarse-grained sediment (cobble, gravel, and sand) stored in a 1,500-foot-long delta and a terrace along the southern margin of the impoundment. A small amount of finer sediment is stored within the low-water pool. The areal extent of the sediment deposit in the impoundment is approximately 11.4 acres. Coarse- and fine-grained sediment passes downstream during large flood events. During a 1986 flood event, Yuba Water estimates that between 7,300 and 15,000 cubic yards of sediment were transported through the low-level outlet in the dam. Yuba Water has removed sediment from the impoundment on several occasions, usually in response to large flood events. Specifically, Yuba Water removed sediment in 1986 (unknown volume), 1992 (28,000 cubic yards), 1997 (68,000 cubic yards), 2006 (80,000 cubic yards), and 2017 (41,100 cubic yards).

Log Cabin Diversion Dam

Log Cabin Diversion Dam, located along Oregon Creek, is a passive-spillway dam that spills regularly. The areal extent of the sediment deposit in the impoundment is approximately 3 acres. The Log Cabin Diversion Dam intercepts sediment transported in the creek, except the fine sediment fraction (e.g., washload). Yuba Water removed sediment from the impoundment in 1972 (40,000 cubic yards), 1988 (32,000 cubic yards), 1997 (unknown volume), 2014 (11,000 cubic yards), and 2017 (7,440 cubic yards).

Slate Creek Diversion Dam

Slate Creek Diversion Dam is a diversion dam, located 9.1 river miles upstream from the creek's confluence with the North Yuba River. The dam is owned and operated by the South Feather Water and Power Agency. The dam diverts an average of 70,000 acre-feet per year to the watershed of

Sly Creek Reservoir. The impoundment of the Slate Creek Diversion Dam is filled with cobble, gravel, sand, and silt, mostly related to past hydraulic mining in the upstream source area. Prior to 1986, the South Feather Water and Power Agency regularly passed bedload and suspended load sediment from upstream sources through a low-level outlet in the Slate Creek Diversion Dam during high flows. However, this practice was discontinued in 1986 because of concerns regarding the potential transport of contaminated fine-grained sediment to downstream reaches. Subsequent efforts to move any significant amount of sediment past the dam were mostly unsuccessful.

New Bullards Bar Dam

New Bullards Bar Dam was constructed in 1970, inundating the smaller Bullards Bar Dam that was constructed from 1923 to 1924. New Bullards Bar Dam traps all of the sediment supplied by the North Yuba River. North Yuba River was not heavily disturbed by hydraulic mining and therefore has a much lower sediment production rate compared to the Middle and South Yuba Rivers (Stillwater Sciences, 2013). High-flow events combined with a high water surface elevation in New Bullards Bar Reservoir have resulted in a deposit of approximately 0.6 acre at the confluence of Slate Creek with the reservoir, although information on the volume of sediment accumulated in the entire reservoir was not available. New Bullards Bar Reservoir has never been dredged. The base of the spillway at New Bullards Bar Dam has been eroded to bedrock.

Englebright Dam

Englebright Dam, located on the Yuba River, was constructed from 1935 to 1941 by the California Debris Commission to trap sediment derived from mining operations in the Yuba River Watershed. When first constructed, the reservoir had a gross storage capacity of 70,000 acre-feet; trapped sediment has reduced this capacity to approximately 50,000 acre-feet (USGS, 2003). Based on the estimated accumulation rate behind Englebright Dam, the sediment yield in the Yuba River Basin is between 160 and 340 metric tons/square kilometer/year (Snyder et al., 2004). The spillway below Englebright Dam has also been eroded to bedrock. Englebright Dam is outside the project boundary but adjacent to the Narrows 2 Powerhouse.

Daguerre Point Dam

Daguerre Point Dam is a diversion dam located on the mainstem Yuba River downstream of Englebright Dam. Daguerre Point Dam is approximately 25 feet high and 575 feet long and has no storage capacity or hydropower facilities. The dam was constructed by the California Debris Commission in 1906 to relocate the river and prevent hydraulic mining debris from the Yuba River Watershed from flowing into the Feather and Sacramento Rivers. The USACE administers the dam; the dam is not part of either the YRDP or the Narrows Project.

16.2.8 Shot Rock

Shot rock is irregularly shaped angular cobbles and boulders that typically come from rocky hillsides. Shot rock can be created by human activities such as mining and blasting, or through hillside scouring during major flooding (Pasternack 2010). During a FERC Environmental Site Inspection on July 11, 2018, SWRCB staff identified shot rock lining the Yuba River in the vicinity of Englebright Dam (FERC 2019).

The effects of shot rock on aquatic habitat can be both beneficial and detrimental, particularly to salmonids. The angular geometry of shot rock tends to provide less space for fine gravels to accumulate compared to larger, round boulders; these fine gravels provide salmonid habitat for spawning. However, larger boulder shot rock can also provide flow refuges where adult salmonids can hold and where fine gravel can settle (FERC 2019).

Comments on previous analyses related to the YRDP and Narrows Facilities have requested further research regarding the presence and potential effects of shot rock. A comment on the FEIS by the State Water Board and the Foothills Water Network requested that Yuba Water staff analyze appropriate measures to address past, current, and future effects of the YRDP licensing project on aquatic habitat from shot rock. Previous studies have found that shot rock within the Project Area has been generated from historic activities that are not proposed under the Proposed Project. Shot rock has historically been the result of the miles of tunnel that were dug through the bedrock both upstream and downstream of Englebright Dam. Shot rock was also generated during rock excavation during the historic construction of Englebright Dam. Furthermore, the 1997 flood caused angular hillside rocks and shot rock debris from the canyon bottom to be deposited on top of the hydraulic-mining alluvium in the canyon area downstream of Englebright Dam (Pasternack 2010).

16.3 Regulatory Setting

16.3.1 Federal

16.3.1.1 FERC Engineering Guidelines for the Evaluation of Hydropower Projects

The Office of Energy Projects (OEP) has prepared the FERC Engineering Guidelines for the Evaluation of Power Projects to provide guidance to the technical staff in the processing of applications for license and in the evaluation of dams under Part 12 of the Commission's regulations. These Guidelines will also be used to evaluate proposed modifications or additions to existing projects under the jurisdiction of FERC. The guidelines outline applicable engineering and geotechnical standards for the management of dams and other water conveyance structures.

16.3.1.2 Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act was passed in 2009. The Paleontological Resources Preservation Act directs the Department of Agriculture and the Department of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise. This act applies to lands administered by the Forest Service, such as National Forests, along with lands managed by BLM, the Bureau of Reclamation, the NPS, and the USFWS.

16.3.1.3 Forest Service Directives

The Forest Service Directive System consists of the Forest Service Manual and Handbooks, which codify the agency's policy, practice, and procedure. The system serves as the primary basis for the internal management and control of all programs and the primary source of administrative direction to Forest Service employees. Some Manuals and Handbooks include guidance and requirements for grading work on USFS lands intended to minimize potential impacts on

geological and soil resources. These include Forest Service Handbook 2309.13, which requires site plans for recreation facilities to include grading plans and for an engineering report for a developed recreation site to specify the type of toilet facility appropriate for the site. Also applicable is Forest Service Handbook 7709.56 - Road Preconstruction. Among other provisions, this handbook sets design standards for roads on National Forest lands and requires erosion control and watershed protection measures during and after construction.

16.3.2 State

16.3.2.1 California Water Code, Division 3 – Dams and Reservoirs

Division 3 of the California Water Code provides for State regulation of dams and reservoirs. As set forth in California Water Code Section 6002, a dam falls under State regulation if it either (a) is or will be 25 feet or more in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the department, or from the lowest elevation of the outside limit of the barrier, as determined by the department, if it is not across a stream channel or watercourse, to the maximum possible water storage elevation or (b) has or will have an impounding capacity of 50 acre-feet or more. The Division of Safety of Dams (DSOD) of the Department of Water Resources (DWR) is the State regulatory agency that enforces dam and reservoir regulations.

The DWR, through the DSOD, supervises the construction, enlargement, alteration, repair, maintenance, operation, and removal of dams and reservoirs for the protection of life and property. California Water Code Section 6081 states that, in determining whether or not a dam or reservoir or proposed dam or reservoir constitutes or would constitute a danger to life or property, the DWR shall take into consideration the possibility that the dam or reservoir might be endangered by seepage, earth movement, or other conditions which exist or which might occur in any area in the vicinity of the dam or reservoir. Whenever the DWR deems that any such condition endangers a dam or reservoir, it shall order the owner to take such action determined to be necessary to remove the resultant danger to life and property.

The DSOD inspects each dam under its jurisdiction on an annual basis to ensure it is safe, performing as intended, and is not developing issues. Roughly one-third of these inspections include in-depth instrumentation reviews of the dam surveillance network data. In addition, the DSOD periodically reviews the stability of dams and their major appurtenances in light of improved design approaches and requirements, as well as new findings regarding earthquake hazards and hydrologic estimates in California.

16.3.2.2 California Building Code and California Health and Safety Code

California provides minimum standards for building design through the California Building Code (C.C.R., Title 24). The state earthquake protection law (California Health and Safety Code § 19100 *et seq.*) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. The California Building Code identifies seismic factors that must be considered in structural design, as well as regulates the excavation of foundations and retaining walls, construction on unstable soils, such as expansive soils and areas subject to liquefaction, and regulates grading activities, including drainage and erosion control.

16.3.2.3 Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC §§ 2621 - 2630) was enacted in 1972 to reduce the hazard of surface faulting to structures designed for human occupancy. The act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and issue appropriate maps, which are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, the permitting agency must require a geologic investigation to demonstrate that buildings intended for human habitation would not be constructed on active faults. There are no Alquist-Priolo fault zones identified in the Project Area (California Geological Survey 2022).

16.3.2.4 Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC §§ 2690 - 2699.6) directs the Department of Conservation's California Geological Survey to identify and map areas prone to earthquake liquefaction hazards, earthquake-induced landslides, and amplified ground shaking. The act requires the State Geologist to establish regulatory zones named Zones of Required Investigation and to issue appropriate maps called Seismic Hazard Zone maps. These maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling construction and development.

16.3.2.5 Water Quality Control Policy for Siting, Design, O&M of Onsite Wastewater Treatment Systems

Due to statewide public concerns about onsite wastewater treatment systems (OWTS), in 2000 Governor Gray Davis codified the California Water Code §13290 *et seq.*, a modified form of Assembly Bill 885. These sections directed the State Water Resources Control Board (State Board) to adopt standards or regulations for OWTS by January 2004. On June 19, 2012, the State Board adopted Resolution No. 2012-0032, which includes the Water Quality Control Policy for Siting, Design, O&M of Onsite Wastewater Treatment Systems (OWTS Policy). The goal of the OWTS Policy is to correct and prevent system failures due to poor siting and design, and excessive OWTS densities. Local agencies may apply to implement the OWTS Policy through establishing a Local Agency Management Program, which must be approved by the appropriate regional water quality control board.

16.3.2.6 General Permit for Construction Activities

In accordance with the NPDES permit program overseen by the USEPA, the State of California adopted the Construction General Permit, Order No. 2022-0057-DWQ, effective September 1, 2023. The Construction General Permit regulates construction site stormwater management. Dischargers are required to obtain coverage under the permit for discharges of stormwater associated with construction activity whose projects disturb one or more ac of soil, or whose projects disturb less than one-ac but are part of a larger common plan of development that in total disturbs one or more ac.

Permit applicants are required to submit a Notice of Intent to the SWRCB and to prepare a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies BMPs that must be

implemented during construction to reduce and prevent potential impacts on the water quality of downstream water bodies. The BMPs identified are directed at implementing both sediment and erosion control measures and other 'good housekeeping' measures to control chemical contaminants. Examples of minimum BMPs that could be implemented, as applicable, include:

- Erosion controls - preserve existing vegetation, minimize the amount of soil exposed during construction activity, minimize the disturbance of steep slopes, minimize soil compaction in areas other than where the intended function of a specific area dictates that it be compacted, reestablish vegetation or non-vegetative erosion controls as soon as practicable.
- Sediment controls - establish and maintain effective perimeter controls, stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site.

Construction sites with higher erosion or sedimentation risk shall be required to implement additional erosion and sediment control BMPs. These include designing and constructing cut and fill slopes in a manner to ensure slope stability and to minimize erosion, limiting construction activity traffic to and from the project to entrances and exits that employ effective controls to prevent off-site tracking of sediment, maintaining and protecting all storm drain inlets, perimeter controls, and BMPs at entrances and exits, and removing any excess sediment or other construction activity-related materials that are deposited on the impervious roads by vacuuming or sweeping prior to any precipitation event (SWRCB 2022).

16.3.2.7 Paleontological Resources

CEQA includes in its definition of historical resources "…any object [or] site …that has yielded or may be likely to yield information important in prehistory…" (14 C.C.R. § 15064.5[a][3]), which is typically interpreted as including fossils and other paleontological resources. More specifically, destruction of a "…unique paleontological resource or site or unique geologic feature…" constitutes a significant impact pursuant to CEQA Guidelines Appendix G. Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in the project; assessment of potential impacts on significant or unique resources; and development of mitigation measures for potentially significant impacts, which may include monitoring, data recovery excavation, and/or avoidance.

As noted in Chapter 13, Cultural Resources, California PRC § 5097.5 states that no person will knowingly and willfully excavate upon, or remove, destroy, injure, or deface historic or prehistoric resources. These include vertebrate paleontological sites, including fossilized footprints, or any other paleontological feature situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.

The Society of Vertebrate Paleontology has guidance for assessing and mitigating paleontological resources that could potentially be impacted from land development. This guidance is included in the Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (Society of Vertebrate Paleontology 2010). As part of the assessment process for paleontological resources, the Society of Vertebrate Paleontology's guidance groups rock units into a high, undetermined, low, or no potential category for containing significant paleontological

resources. These categories then determine the level of mitigation required, or further assessment prior to construction, for adequate protection or salvage of paleontological resources on a project site.

16.3.3 Regional/Local

16.3.3.1 Yuba County Grading Ordinance

Under Yuba County Code Chapter 11.23, which is considered the Yuba County Grading Ordinance, a grading permit is required for any grading in such a manner that quantities of dirt, soil, rock, debris or other material substantially in excess of natural levels are washed, eroded or otherwise moved from the site, except as specifically provided for by a permit. In no event shall grading activities cause or contribute to the violation of provisions of any applicable NPDES stormwater discharge permit. No person shall do, or permit to be done, any grading which may obstruct, impede, or interfere with the natural flow of stormwater in such manner as to cause flooding where it would not otherwise occur, aggravate any existing flooding condition, or cause accelerated erosion. A grading permit application shall include a SWPPP with a State-issued Waste Discharge Identification number, if applicable.

Chapter 11.23 also states that, regardless of whether or not a grading permit is required, all grading and earthwork activities within unincorporated Yuba County shall employ BMPs to minimize erosion and to control sediment discharges to the maximum extent practicable in accordance with Yuba County standards, acceptable industry standards, and the most recently adopted version of the SWRCB's Construction General Permit. Grading plans shall be designed with long-term erosion and sediment control as a primary consideration. Erosion prevention and source control are to be emphasized over sediment controls and treatment. Grading operations shall provide erosion and sediment control measures, except upon a clear demonstration, to the satisfaction of the Community Development and Services Agency that at no stage of the work will there be any substantial risk of increased sediment discharge from the site.

16.3.3.2 Nevada County Grading Ordinance

The Nevada County Grading Ordinance (Nevada County Code Title 3, Chapter V, Article 13) requires a grading permit from the Building Official prior to any grading work. No person shall do or permit to be done any grading in such a manner that quantities of dirt, soil, rock, debris, or other material substantially in excess of natural levels are washed, eroded, or otherwise moved from the site, except as specifically provided for by a permit. No person shall do, or permit to be done, any grading which may obstruct, impede or interfere with the natural flow of storm waters, whether such waters are unconfined upon the surface of the land or confined within land depressions or natural drainage ways, unimproved channels or watercourses, or improved ditches, channels or conduits, in such manner as to cause flooding where it would not otherwise occur, aggravate any existing flooding condition or cause accelerated erosion except where said grading is in accordance with all applicable laws, including but not limited to, these permit requirements.

16.3.3.3 Sierra County Grading Ordinance

The Sierra County Grading Ordinance (Sierra County Code Chapter 12.08) was enacted for the purpose of regulating grading on property within the unincorporated area of Sierra County to safeguard life, limb, health, property and public welfare; and to avoid pollution of watercourses with hazardous materials, nutrients, sediments, or other earthen materials generated on or caused by surface runoff on or across the permit area; among other objectives. No person shall do, or permit to be done, any grading, including cuts, fills or ground disturbances in any manner whatsoever, including the uprooting, tilling under or covering over of vegetation, except as specifically authorized and provided for in a permit issued by the Sierra County Department of Planning and Building, or unless the activity is specifically exempt from this requirement.

16.4 Impact Assessment Methodology

The impact analysis for geology and soils follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. A resource-specific methodology, described below, incorporates information from the analysis conducted by FERC. The geographical scope of the impact analysis on geology and soils is the to the Project Area.

This analysis references information related to geology, soils, and paleontological resources that was collected using the following sources:

- California Geological Survey Seismic Hazards Program: Alquist-Priolo Fault Hazard Zones
- Natural Resource Conservation Service Soil Survey Data.
- Yuba County General Plan 2030 Draft Environmental Impact Report
- Soil Survey of Yuba County
- Nevada County General Plan
- Sierra County General Plan
- UC Museum of Paleontology databases

The analysis of impacts on geology and soils within this Chapter includes a qualitative assessment of the Proposed Project based on the existing geologic setting. The analysis addresses potential impacts associated with ground-disturbing activities, such as the construction of buildings, alterations to and removal of existing structures, and grading activities. Ground-disturbing activities that would occur under Alternative 1 or 2 would be the same as those described for the Proposed Projects.

Hydraulic changes also have the potential to affect the soils and geological setting within a body of water. While changes in flows under the Proposed Projects and Alternatives 1 and 2 are not expected to materially change seismic risks, they would have the potential to change erosive conditions within the Yuba River and adjoining bodies of water. As changes in peak flow rates of Project Area rivers and creeks would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4c, Figures c-Flow 1 through C5-Flow-48), there are

limitations to the extent which quantitative assessments of modeled hydrology can precisely distinguish between the scale of these erosion impacts. . Accordingly, while this analysis considers general trends in modeled hydrology (see Chapter 5, Surface Water Resources and Chapter 8, Water Quality), the corresponding changes in erosion are discussed qualitatively. As more precise comparisons of modeled hydrology are not necessary or helpful for this analysis, this Chapter does not use the Future Baseline, and instead evaluates all impacts relative to the Existing Condition

As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. Therefore, no new structures or systems, including wastewater systems, would be installed. No ground disturbance activities are proposed. Because of this, the Narrows Project will not result in any construction impacts requiring analysis in this chapter. Furthermore, operations and facility maintenance activities of the Narrows Project are not anticipated to consist of ground-disturbing activities that could affect geology and soils.

16.4.1 Plans Referenced in the Analysis

The approval of the FERC licenses for the Proposed Projects would require the implementation of various plans related to the management of geologic and soil resources, as outlined below.

16.4.1.1 Erosion and Sediment Control Plan

An Erosion and Sediment Control Plan was prepared as part of the FERC relicensing process of the YRDP (included in **Appendix 2B-5** of this EIR). This plan assesses ground-disturbing activities from routine O&M, and new construction that could produce undesirable erosion or sedimentation conditions near streams or reservoirs. The Erosion and Sediment Control Plan outlines measures related to new construction, routine maintenance, and emergency erosion control events.

16.4.1.2 Log Cabin and Our House Diversion Dams Sediment Management Plan

The purpose of the Log Cabin and Our House Diversion Dams Sediment Management Plan (Sediment Management Plan, included in **Appendix 2B-13** of this EIR) is to provide for dam safety and proper functioning of project facilities, especially the fish release and low-level outlet valves. Furthermore, allowing the passage of sediments that accumulate behind the dams helps to maintain the health of the aquatic environment downstream of the dams. The Sediment Plan would be carried out by Yuba Water as a condition of the Proposed Projects.

Intense storms occur periodically in the Middle Yuba River and Oregon Creek Watersheds. Such storms can move large amounts of sediment in these streams. If not trapped in impoundments, this sediment could form gravel bars that provide viable spawning and rearing habitat for salmonids. However, the channels of both streams are transport-dominated, where the capacity of the channels to move sediment is greater than the amount of sediment entering the channels. Bedrock and boulder control on much of the bed and banks limits the lateral or vertical movement of the stream channels. Local, short channel segments with small and localized depositional features could respond to the changes in sediment supply and hydrology, but overall changes in coarse sediment storage or channel shape are unlikely. Therefore, sediment is eventually removed from the channels unless it is constantly resupplied from upstream sources.

As outlined in the 2019 FEIS, the plan includes five components to manage sediment:

1. Yuba Water would maintain a minimum pool to facilitate sediment deposition at the upstream end of the impoundments to avoid blockage of the outlets at the dams.

2. Yuba Water would open the low-level outlet valves at the dams during one or multiple periods of high flow to pass sediment. Passage would typically occur between October 1 and March 21, allowing high spring flows to mobilize and redistribute the sediment below the dam.

3. Yuba Water would clear blocked valves or outlets by using air and/or water nozzles to blow sediment out of the valves, and/or a suction dredge to remove, at each dam, up to 250 cubic yards of accumulated sediment. The sediment would be pumped around the dam and discharged directly to the river downstream of the dam. If needed, these clearing activities would be performed between October 1 and March 31. Suction-dredging could occur until April 10 if high flows preclude staff access.

4. Yuba Water would mechanically remove sediment, if large storms resulted in extensive accumulations of sediment in the impoundments. Yuba Water would place excavated sediment at two potential disposal sites, located at a distance between 5 to 15 miles from the impoundments. The sediments would be tested for metals prior to sediment removal, and if sediments were determined to be hazardous, they would not be removed until an alternate plan is in place.

5. If needed, Yuba Water would conduct emergency work after large storms for repair and protection of facilities and resources. Where possible, the nature of emergency work, with the exception of permitting, would follow the measures for mechanical removal of sediment.

16.4.2 Impact Indicators and Significance Criteria

For geology and soils resources, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on geology and soils if it would:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:
    - **Impact GEO-1a:** Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
    - **Impact GEO-1b:** Strong seismic ground shaking.
    - **Impact GEO-1c:** Seismic-related ground failure, including liquefaction.
    - **Impact GEO-1d:** Landslides.
- **Impact GEO-2:** Result in substantial soil erosion or the loss of topsoil.

- **Impact GEO-3:** Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- **Impact GEO-4:** Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risk to life or property.
- **Impact GEO-5:** Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- **Impact GEO-6:** Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

16.5 Environmental Impact Analysis

16.5.1 Proposed Projects compared to the Existing Condition

Areas Upstream of Englebright Dam

YRDP Impact GEO-PP-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

As stated above, there are no Zones of Required Investigation in the Project Area, including Alquist Priolo zones, Zones of Required Investigation for Landslides, or Zones of Required Investigation for Liquefaction. Furthermore, the Project Area is located in an area with low seismic activity, where damaging earthquakes are rare.

Construction, modification, and operation of the proposed power generation facilities and new non-generation facilities would be subject to the FERC Engineering Guidelines for the Evaluation of Hydropower Projects. In compliance with these guidelines, geotechnical investigations are required for new construction. Geologic conditions are reviewed for existing structures to assess seismic hazards and identify appropriate engineering methods for design, construction, and operation. Prior to construction activities for proposed power generation facilities and non-generation facilities, site-specific seismic hazard evaluations would be conducted to identify any necessary design engineering considerations that must be incorporated into the design of the particular facility. Compliance with the guidelines would prevent adverse effects related to seismic activity on power generation and non-generation facilities.

Existing dams within the YRDP facilities would be subject to the directives within Forest Service Handbook 7509.11 – Dams Management Handbook. Pursuant to this handbook, YRDP dams would be regularly inspected to determine the stability of the structure and its foundation. The assessment would determine potential hazards that could affect the structure, including seismic activity.

The alteration or operation of existing YRDP recreation facilities would include improvements such as modifications to electrical equipment, alterations to trails and other grading work, and the construction of small structures. Proposed YRDP Recreation Facilities would involve the construction of new campgrounds, parking areas, trails, and other small structures. The YRDP facilities would also include additions to some roads and trails.

Changes to structures that could affect their resistance to seismicity, as well as the construction of new buildings, would be subject to the California Building Code. The California Building Code regulates the grading of slopes, the design of buildings, and other work that would be conducted as part of the YRDP recreational facilities. The California Building Code includes requirements for new buildings, structures, and some grading work to regulate seismic risk related to slope/ground failure, ground shaking, and liquefaction. The California Building Code includes requirements for maximum slope gradients, slope protection, drainage and erosion control, and surface preparation.

Grading work associated with YRDP facilities may also be subject to the Yuba County Grading Ordinance, the Nevada County Grading Ordinance, and the Sierra County Grading Ordinance, when proposed within those jurisdictions. Earthwork on USFS lands would be subject to the directives within the Forest Service Handbook that are applicable to the proposed work, such as Forest Service Handbook 7709.56 (Road Preconstruction). Grading for proposed trails on USFS lands would be subject to the Standard Specifications for Construction of Trails and Trail Bridges on Forest Service Projects. These local regulations and requirements include measures that provide slope and ground stability which would be applied during permitting of proposed construction and earthwork. Measures that would be required to comply with these regulations may include the use of rock blankets, gabion blankets, down spouts, flumes, mulch netting, post-construction plantings, sedimentation basins, and other measures.

Construction or modification of YRDP facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce seismic risks. Therefore, the YRDP facilities would have minimal impacts on risk of loss, injury, or death involving seismic related ground failure, including liquefaction and landslides. Overall, the YRDP facilities would have a **less than significant** impact related to seismicity and seismic hazards. No CEQA mitigation is required.

YRDP Impact GEO-PP-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could result in substantial erosion or the loss of topsoil.

Construction, maintenance, alteration, and operation of generation facilities, non-generation facilities, YRDP recreation facilities, roadways, and trails would include proposed ground-disturbing activities that could result in erosion or the loss of topsoil. As discussed above, these activities would be subject to the Erosion and Sediment Control Plan prepared for the YRDP facilities. As detailed in Table 2.4-19, these plans outline specific erosion and sediment control measures, including required monitoring and reporting programs, to manage erosion and sedimentation at YRDP facilities.

Pursuant to the Erosion and Sediment Control Plan, the ground-disturbing activities conducted during the construction and operation of the YRDP facilities would include a comprehensive set of BMPs to control erosion, as discussed further in Chapter 8, Surface Water Quality. These

measures are designed to minimize potential environmental impacts. Examples of minimum BMPs that would be implemented include preserving existing vegetation, minimizing the amount of soil exposed during construction activity, minimizing the disturbance of steep slopes, minimizing soil compaction in areas other than where the intended function of a specific area dictates that it be compacted, and reestablishing vegetation or non-vegetative erosion controls as soon as practicable (SWRCB 2022).

Furthermore, as discussed in the analysis of YRDP Impact GEO-PP-1 above, proposed earthwork would be subject to the California Building Code and/or applicable grading regulations. Proposed work that could generate substantial erosion or loss of topic soil, such as grading of slopes or alterations to structures, would be subject to these regulations. These regulations include maximum permissible slope gradients, required slope protection measures, drainage and erosion control, and surface preparation. Through compliance with these requirements, earthwork would be conducted in a manner that minimizes erosion after construction is completed.

Modeling results also show that peak flow rates of Project Area rivers and creeks with the YRDP Relicensing Project would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4C, Figures C1-Flow-1 through C1-Flow-48). Therefore, the flow changes proposed would not be anticipated to result in substantial erosion or the loss of the topsoil compared to the Existing Condition.

The Proposed YRDP includes the release of floodwaters through the operation of the new ARC Spillway at New Bullards Bar Dam, if it is constructed. This modification in releases would reduce peak spill releases under certain conditions by allowing more water to be released earlier in anticipation of high flood control releases, thereby reducing the stream transport capacity within the reach; however, high scouring flows would continue to occur in the North Yuba River.

As discussed in Chapter 8, Yuba Water separately proposed construction of the ARC Spillway, which would ultimately be included in the new YRDP FERC license. The analysis of those impacts in the ARC Spillway EIR is incorporated by reference.[3] Based on the flow differences that would occur, ARC Spillway operations under the proposed YRDP would not result in any new or more severe potentially significant impacts compared to the impacts under the existing YRDP FERC license identified in the ARC Spillway EIR. Yuba Water previously identified and adopted mitigation measures to reduce the water quality impacts associated with ARC Spillway operations to a less-than-significant level. As explained in Chapter 2, Project Description, and Chapter 8, Surface Water Quality, these previously adopted mitigation measures for ARC Spillway operations have been incorporated into the proposed YRDP and will continue to apply to ARC Spillway operations under the proposed YRDP.

Under current conditions, the Log Cabin and Our House Diversion Dams trap sediment, limiting the recruitment of coarse sediment downstream. The proposed Log Cabin and Our House Diversion Dams Sediment Management Plan (GS2) would improve sediment transport by opening low-level outlet valves during winter and spring high-flow periods. Improved sediment transport in these rivers would benefit aquatic resources by recruiting coarse gravels into fish spawning and

[3] https://www.yubawater.org/252/ARC-Spillway-at-New-Bullards-Bar-Dam

rearing habitat, increase the likelihood of riparian woody species establishment, and improve habitat for sensitive amphibians and other wildlife.

As stated in Section 16.2.8, previous studies have found that shot-rock in the Project Area has mostly originated from historic sources not related to activities proposed under the Proposed Projects. With the implementation of erosion BMPs and compliance with applicable grading regulations, erosive factors that could generate further volumes of shot rock under the construction or operation of YRDP facilities would be limited.

Construction and operation of YRDP facilities would include BMPs to control erosion and siltation. Furthermore, the proposed YRDP would implement measures to manage siltation around YRDP facilities. Therefore, potential impacts on erosion and siltation would be **less than significant**. No CEQA mitigation is required.

YRDP Impact GEO-PP-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Construction or modification to YRDP facilities may have the potential to occur on geologic units or soils that are classified as unstable. As discussed in the analysis of YRDP Impact GEO-PP-1 above, proposed work involving new structures would be subject to the California Building Code and/or other applicable grading regulations. These regulations include requirements to maximize the stability of structures based upon on-site geologic units and soils. The California Building Code specifically includes requirements for maximum slope gradients, slope protection, drainage and erosion control, and surface preparation.

Furthermore, the California Building Code requires a Liquefaction Study be prepared for sites where an elevated risk of liquefaction may be present (i.e., sites with a maximum considered earthquake spectral response accelerations at short periods (S_s) greater than 0.5g). Where structures are proposed on a site where there is an increased potential of liquefaction, a study of the geological conditions would be prepared pursuant to the Building Code's requirements. The study would include measures that must be incorporated in the construction design.

Construction or modification of YRDP facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce risk of landslides, lateral spreading, subsidence, liquefaction, or collapse. Therefore, the construction and operation of YRDP facilities would have minimal impacts on risk of loss, injury, or death involving seismic related ground failure, including liquefaction and landslides. Overall, YRDP facilities would have a **less than significant** impact related to landslides, lateral spreading, subsidence, liquefaction, or collapse. No CEQA mitigation is required.

YRDP Impact GEO-PP-4: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on expansive soils, creating substantial direct or indirect risk to life or property.

The Project Area is generally classified as having low to moderate shrink-swell potential, due to the limited clay content of the soils in the area (Yuba County 2011). As noted, there is one soil

map unit that has a high shrink-swell potential, however, no construction is proposed where this soil type is present.

Construction or modification to YRDP facilities may occur on soils that have a low to moderate shrink swell potential. As discussed in the analysis of YRDP Impact GEO-PP-1 above, the construction and alteration of YRDP facilities would be subject to the California Building Code. When new structural elements are being proposed, the California Building Code includes requirements to conduct soil tests where expansive soils may be present. When required, these soil tests provide recommendations for foundation type and design criteria that must be incorporated into the design of a building, including provisions to address any potential effects of expansive soils.

Construction or modification of YRDP facilities would be conducted in accordance with relevant state regulations intended to reduce the risk of expansive soils to any proposed or existing structures. Therefore, impacts related to expansive soils would be **less than significant,** and no CEQA mitigation is required.

YRDP Impact GEO-PP-5: Construction of proposed YRDP facilities, or operations of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Some YRDP facilities, such as administrative and operations buildings at non-generation facilities, utilize wastewater disposal systems where waste is contained in an onsite tank and periodically pumped and transported to an approved disposal facility offsite. These facilities do not utilize nearby soils for the dispersion or percolation of waste.

Other YRDP facilities include the use of septic tanks or alternative wastewater disposal systems, particularly where new restrooms or alterations to existing restrooms are proposed. New septic systems would be subject to the Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems. Any proposed waste treatment system would be reviewed by the applicable local agency, dependent upon the location of the proposed waste treatment facility. The applicable agencies' Local Agency Management Plan would include requirements for the design of septic tanks and alternative wastewater disposal systems. Through application of the applicable local requirements, new septic systems or waste disposal systems would not be approved unless on-site soils are capable of adequately supporting the disposal of wastewater.

YRDP facilities that propose septic systems or other alternative wastewater disposal systems on USFS lands would be subject to the directives within the Forest Service Handbook 7409.11 – Sanitary Engineering and Public Health Handbook. The directives within this handbook include standards for the design and siting of waste disposal systems, including specifications for the characteristics of soils that must be present for the percolation or dispersion of wastewater.

Construction or modification of YRDP facilities that include septic tanks or alternative wastewater disposal systems would be conducted in accordance with relevant state and local regulations. Compliance with these regulations would reduce potential environmental impacts. Therefore, the

impacts related to the use of septic systems or other alternative wastewater systems would be **less than significant,** and no CEQA mitigation is required.

YRDP Impact GEO-PP-6: Construction of proposed YRDP facilities, or operations of existing facilities, that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

There are no known unique paleontological resources in the Project Area. Moreover, because the Project Area is composed primarily of Paleozoic and Mesozoic igneous rocks, volcanic rocks, and metamorphosed sediments and volcanic rocks, unknown paleontological resources are not anticipated to occur.

Proposed construction activities would not result in direct alteration or damage to unique geologic features identified within the Projects Area, including the Yuba River and adjacent gorges. Any construction activities within the vicinity of the Yuba River would not affect the visual or structural integrity of any of the unique geologic features.

Therefore, neither construction nor operations associated with the YRDP would have a high potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Therefore, impacts related to paleontological resources and geologic features would be **less than significant,** and no CEQA mitigation is required.

Lower Yuba River

Narrows Impact GEO-PP-1: Operations of existing Narrows Project facilities that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

As stated above, there are no Zones of Required Investigation in the Project Area, including Alquist Priolo zones, Zones of Required Investigation for Landslides, or Zones of Required Investigation for Liquefaction. Furthermore, the Project Area is located in an area with low seismic activity, where damaging earthquakes are rare. No new structures that could be affected by seismic activity are proposed.

Operation of the Narrows Project facilities under the Proposed Projects would not significantly change from the Existing Condition and would remain subject to the FERC Engineering Guidelines for the Evaluation of Hydropower Projects. Geologic conditions are reviewed for existing structures to assess seismic hazards and identify appropriate methods for O&M. Compliance with the guidelines would prevent adverse effects related to seismic activity on power generation and non-generation facilities.

Operation of YRDP Narrows Project facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce seismic risks. Therefore, Narrows Project facilities would have minimal effects on risk of loss, injury, or death involving seismic related ground failure, including liquefaction and landslides, and would have a **less than significant** impact related to seismicity and seismic hazards. No CEQA mitigation is required.

Narrows Impact GEO-PP-2: Operations of existing Narrows Project facilities that could result in substantial erosion or the loss of topsoil.

As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. The Narrows Project facilities would continue to operate similarly to existing conditions. Therefore, no new structures or systems would be installed. No ground disturbance activities that could result in erosion or loss of topsoil are proposed.

With the implementation of the proposed conditions on the FERC license, operation of the Narrows Project would have a **less than significant** impact related to erosion or loss of topsoil, and no CEQA mitigation is required.

Narrows Impact GEO-PP-3: Operations of existing Narrows Project facilities that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. Therefore, no new structures or systems would be installed. No ground disturbance activities that could result in a geologic unit or soil becoming unstable are proposed. Therefore, operation of the Narrows Project would have **a less than significant** impact related to unstable geologic units or soils, and no CEQA mitigation is required.

Narrows Impact GEO-PP-4: Operations of existing Narrows Project facilities that are located on expansive soils, creating substantial direct or indirect risk to life or property.

As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. Existing Narrows Facilities are either not located on expansive soils or have been designed in a manner that accounts for the potential of shrinking and swelling conditions. Therefore, operation of the Narrows Project would have a **less than significant** impact related to expansive soils, and no CEQA mitigation is required.

Narrows Impact GEO-PP-5: Operations of existing Narrows Project facilities where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

No alternative wastewater disposal systems are proposed as part of the Narrows Project. Therefore, **no impact** would occur, and no CEQA mitigation is required.

Narrows Impact GEO-PP-6: Operations of existing Narrows Project facilities that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. Additionally, there are no recorded vertebrate fossil sites within Yuba County, and no vertebrate fossil sites have been recorded in the portion of Nevada County that are adjacent to the Narrows Projects. Therefore, Narrows Project operations would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. **No impact** would occur, and no CEQA mitigation is required.

16.5.2 Alternative 1 compared to the Existing Condition

Areas Upstream of Englebright Dam

YRDP Impact GEO-Alt1-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

Construction and non-flow operations of YRDP facilities under Alternative 1 would be the same as would occur under the Proposed Projects scenario, and therefore would be subject to the same seismic hazard risk. Differences in flows would not materially alter seismic risks. There are no Zones of Required Investigation for liquefaction or landslides identified in the Project Area. Construction or modification of YRDP facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce seismic risks. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-1, Alternative 1 YRDP construction and operations would have a **less than significant** impact related to seismicity and seismic hazards.

YRDP Impact GEO-Alt1-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could result in substantial erosion or the loss of topsoil.

Construction and non-flow operations of YRDP facilities under Alternative 1 would be the same as would occur under the Proposed Projects scenario, and therefore would have the same associated erosion impacts discussed above for YRDP Impact GEO-PP-1.

With respect to flows, modeling results show that peak flow rates of Project Area rivers and creeks with Alternative 1 would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4C, Figures C3-Flow-1 through C3-Flow-48). Therefore, the flow changes proposed under Alternative 1 would not be anticipated to result in substantial erosion or the loss of the topsoil compared to the Existing Condition. Furthermore, the proposed Log Cabin and Our House Diversion Dams Sediment Management Plan (GS2) would include measures that are expected to avoid significant impacts related to erosion within surface waters (see Section 16.4.1.2 above).

Therefore, impacts on erosion and loss of topsoil with Alternative 1 would be **less than significant**.

YRDP Impact GEO-Alt1-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Construction and non-flow operations of YRDP facilities under Alternative 1 would be the same as would occur under the Proposed Projects scenario and would therefore have the same impacts associated with unstable geologic units and soils. Differences in flows would not materially alter these geology- and soils-based impacts. Construction or modification of YRDP facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce the risk of landslides, lateral spreading, subsidence, liquefaction, or collapse. Therefore, for the same

reasons discussed above for YRDP Impact GEO-PP-3, Alternative 1 would have a **less than significant** impact related to landslides, lateral spreading, subsidence, liquefaction, or collapse.

YRDP Impact GEO-Alt1-4: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on expansive soils, creating substantial direct or indirect risk to life or property.

Construction and non-flow operations of YRDP facilities under Alternative 1 would be the same as would occur under the Proposed Projects scenario and would therefore have the same associated impacts related to expansive soils. Differences in flows would not materially alter these impacts. Construction or modification of YRDP facilities would be conducted in accordance with relevant state regulations intended to reduce the risk of expansive soils to any proposed or existing structures. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-4, Alternative 1 impacts related to expansive soils would be **less than significant**.

YRDP Impact GEO-Alt1-5: Construction of proposed YRDP facilities, or operations of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Construction and non-flow operations of YRDP facilities under Alternative 1 would be the same as would occur under the Proposed Projects scenario and would therefore have the same associated impacts related to septic tanks and alternative wastewater disposal systems. Differences in flows would not materially alter these impacts. Construction or modification of YRDP facilities that include septic tanks or alternative wastewater disposal systems would be conducted in accordance with relevant state and local regulations. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-5, the Alternative 1 impacts related to septic systems or alternative wastewater disposal systems would be **less than significant**.

YRDP Impact GEO-Alt1-6: Construction of proposed YRDP facilities, or operations of existing facilities, that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Construction and non-flow operations of YRDP facilities under Alternative 1 would be the same as would occur under the Proposed Projects scenario and would therefore have the same associated impacts to paleontological resources and geologic features. Differences in flows would not materially affect these impacts. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-6, neither construction nor operations under Alternative 1 would have a high potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Therefore, impacts related to paleontological resources and geologic features would be **less than significant**.

Lower Yuba River

Narrows Impact GEO-Alt1-1: Operations of existing Narrows Project facilities that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

Operations of Narrows Project facilities under Alternative 1 would be similar to those under the Proposed Projects scenario and the Existing Condition and therefore would have similar impacts associated with seismic hazard risk to those discussed above for Narrows Impact GEO-PP-1. There are no Zones of Required Investigation for liquefaction or landslides identified in the Project Area. Therefore, Alternative 1 Narrows Project operations would have a **less than significant** impact related to seismicity and seismic hazards.

Narrows Impact GEO-Alt1-2: Operations of existing Narrows Project facilities that could result in substantial erosion or the loss of topsoil.

Operations of Narrows Project facilities under Alternative 1 would be similar to those under the Proposed Projects scenario and the Existing Condition and therefore would have similar impacts associated with erosion and loss of topsoil to those discussed above for Narrows Impact GEO-PP-2. Under Alternative 1, no new structures or systems would be installed. No ground disturbance activities that could result in erosion or loss of topsoil are proposed. Therefore, operation of the Narrows Project would have a **less than significant** impact related to erosion or loss of topsoil.

Narrows Impact GEO-Alt1-3: Operations of existing Narrows Project facilities that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Alternative 1 does not propose any changes to existing Narrows Project works or facilities. Therefore, no new structures or systems would be installed. No ground disturbance activities that could result in a geologic unit or soil becoming unstable are proposed. Therefore, operation of the Narrows Project would have a **less than significant** impact related to unstable geologic units or soils.

Narrows Impact GEO-Alt1-4: Operations of existing Narrows Project facilities that are located on expansive soils, creating substantial direct or indirect risk to life or property.

Alternative 1 would not propose any changes to existing Narrows Project works or facilities. Existing Narrows Facilities are either not located on expansive soils or have been designed in a manner that accounts for the potential of shrinking and swelling conditions. Therefore, operation of the Narrows Project would have a **less than significant** impact related to expansive soils.

Narrows Impact GEO-Alt1-5: Operations of existing Narrows Project facilities where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Alternative 1 would not propose any alternative wastewater disposal systems as part of the Narrows Project. Therefore, **no impact** would occur.

Narrows Impact GEO-Alt1-6: YRDP Operations of existing Narrows Project facilities that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Alternative 1 would not propose any changes to existing Narrows Project works or facilities. Additionally, there are no recorded vertebrate fossil sites within Yuba County, and no vertebrate

fossil sites have been recorded in the portion of Nevada County that are adjacent to the Narrows Projects. Therefore, Narrows Project operations would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. **No impact** would occur.

16.5.3 Alternative 2 compared to the Existing Condition

Areas Upstream of Englebright Dam

YRDP Impact GEO-Alt2-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

Construction and non-flow operations of YRDP facilities under Alternative 2 would be the same as would occur under the Proposed Projects scenario and therefore would be subject to the same seismic hazard risk. Differences in flows would not materially alter seismic risks. There are no Zones of Required Investigation for liquefaction or landslides identified in the Project Area. Construction or modification of YRDP facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce seismic risks. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-1, Alternative 2 YRDP construction and operations would have a **less than significant** impact related to seismicity and seismic hazards.

YRDP Impact GEO-Alt2-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could result in substantial erosion or the loss of topsoil.

Construction and non-flow operations of YRDP facilities under Alternative 2 would be the same as would occur under the Proposed Projects scenario, and therefore would have the same associated erosion impacts discussed above for YRDP Impact GEO-PP-1.

With respect to flows, modeling results show that peak flow rates of Project Area rivers and creeks with Alternative 2 would be the same or very similar to those that occur under the Existing Condition (refer to Appendix 4C, Figures C5-Flow-1 through C5-Flow-48). Therefore, the flow changes proposed under Alternative 2 would not be anticipated to result in substantial erosion or the loss of the topsoil compared to the Existing Condition. Furthermore, the measures in the proposed Log Cabin and Our House Diversion Dams Sediment Management Plan (GS2) would include measures that are expected to avoid significant impacts related to erosion within surface waters.

Therefore, impacts on erosion and loss of topsoil with Alternative 2 would be **less than significant**.

YRDP Impact GEO-Alt2-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Construction and non-flow operations of YRDP facilities under Alternative 2 would be the same as would occur under the Proposed Projects scenario and would therefore have the same impacts associated with unstable geologic units and soils. Differences in flows would not materially alter

these geology- and soils-based impacts. Construction or modification of YRDP facilities would be conducted in accordance with relevant federal, state, and local regulations intended to reduce the risk of landslides, lateral spreading, subsidence, liquefaction, or collapse. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-3, Alternative 2 would have a **less than significant** impact related to landslides, lateral spreading, subsidence, liquefaction, or collapse.

YRDP Impact GEO-Alt2-4: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on expansive soils, creating substantial direct or indirect risk to life or property.

Construction and non-flow operations of YRDP facilities under Alternative 2 would be the same as would occur under the Proposed Projects scenario and would therefore have the same associated impacts related to expansive soils. Differences in flows would not materially alter these impacts. Construction or modification of YRDP facilities would be conducted in accordance with relevant state regulations intended to reduce the risk of expansive soils to any proposed or existing structures. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-4, Alternative 2 impacts related to expansive soils would be **less than significant**.

YRDP Impact GEO-Alt2-5: Construction of proposed YRDP facilities, or operations of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Construction and non-flow operations of YRDP facilities under Alternative 2 would be the same as would occur under the Proposed Projects scenario and would therefore have the same associated impacts related to septic tanks and alternative wastewater disposal systems. Construction or modification of YRDP facilities that include septic tanks or alternative wastewater disposal systems would be conducted in accordance with relevant state and local regulations. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-5, the Alternative 2 impacts related to the disposal of wastewater would be **less than significant**.

YRDP Impact GEO-Alt2-6: Construction of proposed YRDP facilities, or operations of existing facilities, that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Construction and non-flow operations of YRDP facilities under Alternative 2 would be the same as would occur under the Proposed Projects scenario and would therefore have the same associated impacts to paleontological resources and geologic features. Differences in flows would not materially affect these impacts. Therefore, for the same reasons discussed above for YRDP Impact GEO-PP-6, neither construction nor operations under Alternative 2 would have a high potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Therefore, impacts related to paleontological resources and geologic features would be **less than significant**.

Lower Yuba River

Narrows Impact GEO-Alt2-1: Operations of existing Narrows Project facilities that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

Operations of Narrows Project facilities under Alternative 2 would not substantially alter flows and would include the same non-flow operations as would occur under the Proposed Projects scenario. As discussed above for Narrows Impact GEO-PP-1, there are no Zones of Required Investigation for liquefaction or landslides identified in the Project Area. Therefore, Alternative 2 Narrows Project operations would have a **less than significant** impact related to seismicity and seismic hazards.

Narrows Impact GEO-Alt2-2: Operations of existing Narrows Project facilities that could result in substantial erosion or the loss of topsoil.

Operations of Narrows facilities under Alternative 2 would not substantially alter flows and would include the same non-flow operations as would occur under the Proposed Projects scenario. No new structures or systems would be installed. No ground disturbance activities that could result in erosion or loss of topsoil are proposed. Therefore, for the same reasons discussed above for Narrows Impact GEO-PP-2, operations of the Narrows Project would have a **less than significant** impact related to erosion or loss of topsoil.

Narrows Impact GEO-Alt2-3: Operations of existing Narrows Project facilities that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Alternative 2 does not propose any changes to existing Narrows Project works or facilities. Therefore, no new structures or systems would be installed. No ground disturbance activities that could result in a geologic unit or soil becoming unstable are proposed. Therefore, operation of the Narrows Project would have a **less than significant** impact related to unstable geologic units or soils.

Narrows Impact GEO-Alt2-4: Operations of existing Narrows Project facilities that are located on expansive soils, creating substantial direct or indirect risk to life or property.

Alternative 2 would not propose any changes to existing Narrows Project works or facilities. Existing Narrows Facilities are either not located on expansive soils or have been designed in a manner that accounts for the potential of shrinking and swelling conditions. Therefore, operation of the Narrows Project would have a **less than significant** impact related to expansive soils.

Narrows Impact GEO-Alt2-5: Operations of existing Narrows Project facilities where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Alternative 2 would not propose any alternative wastewater disposal systems as part of the Narrows Project. Therefore, **no impact** would occur.

Narrows Impact GEO-Alt2-6: YRDP Operations of existing Narrows Project facilities that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Alternative 2 would not propose any changes to existing Narrows Project works or facilities. Additionally, there are no recorded vertebrate fossil sites within Yuba County, and no vertebrate fossil sites have been recorded in the portion of Nevada County that are adjacent to the Narrows Projects. Therefore, Narrows Project operations would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. **No impact** would occur.

16.5.4 No Project Alternative compared to the Existing Condition

16.5.4.1 Areas Upstream of Englebright Dam

YRDP Impact GEO-NP-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

No construction work would occur under the No Project Alternative. Therefore, no new facilities that could be subject to seismic risk would be constructed. Aside from the complete reduction in hydropower generation, YRDP operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Therefore, the No Project Alternative would have a **less than significant impact** related to seismicity and seismic hazards.

YRDP Impact GEO-NP-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that could result in substantial erosion or the loss of topsoil.

No construction work would occur under the No Project Alternative; therefore, no activities that would propose ground-disturbing activities that could result in erosion or the loss of topsoil would occur.

Under the No Project Alternative, Yuba Water would not be able to obtain one-year FERC licenses for YRDP facilities. Yuba Water would continue its existing YRDP operations, excluding the power generating facilities, outside of FERC jurisdiction for water supply and flood management purposes. Existing environmental measures that are implemented during O&M under the Existing Condition would continue to be implemented under the No Project Alternative. As such, impacts under the No Project Alternative would be **less than significant**.

YRDP Impact GEO-NP-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

No construction work would occur under the No Project Alternative; therefore, no construction impacts related to unstable geologic units or soils would occur.

As discussed above, Yuba Water would continue its existing YRDP operations under the No Project Alternative, excluding hydropower generation, for water supply and flood management purposes. Existing measures that are implemented during O&M under the Existing Condition would continue to be implemented under the No Project Alternative. As such, impacts associated with unstable geologic units or soils under the No Project Alternative would be **less than significant**.

YRDP Impact GEO-NP-4: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that are located on expansive soils, creating substantial direct or indirect risk to life or property.

No construction work would occur under the No Project Alternative; therefore, no construction impacts related to expansive soils would occur. Existing operations of YRDP facilities, except for hydropower generation, would continue without significant changes and would therefore not create new risks associated with expansive soils or exacerbate existing risks associated with expansive soils. Therefore, impacts under the No Project Alternative related to expansive soils would be **less than significant**.

YRDP Impact GEO-NP-5: Construction of proposed YRDP facilities, or operations of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

No construction work would occur under the No Project Alternative; therefore, no new alternative wastewater disposal systems would be proposed. Existing septic systems, which are generally located on soils that are capable of adequately supporting the disposal and percolation of waste, would continue to operate as they currently do under the Existing Condition. Therefore, the No Project Alternative would have **no impact** related to the disposal of wastewater.

YRDP Impact GEO-NP-6: Construction of proposed YRDP facilities, or operations of existing facilities, which would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

No construction work would occur under the No Project Alternative and no new ground-disturbing activities that could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature would occur. Therefore, the No Project Alternative would have **no impact** related to paleontological resources.

Lower Yuba River

Narrows Impact GEO-NP-1: Operations of existing Narrows Project facilities that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides.

Under the No Project Alternative, aside from the complete reduction in hydropower generation, Narrows Project operations would not significantly change when compared to the Existing

Condition. Therefore, impacts related to seismicity and seismic hazards under the No Project Alternative would be **less than significant.**

Narrows Impact GEO-NP-2: Operations of existing Narrows Project facilities that could result in substantial erosion or the loss of topsoil.

Narrows Project operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Existing measures that are implemented during O&M under the Existing Condition would continue to be implemented. As such, impacts under the No Project Alternative would be **less than significant**.

Narrows Impact GEO-NP-3: Operations of existing Narrows Project facilities that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

As discussed above, Yuba Water would continue its existing Narrows Project operations under the No Project Alternative, excluding hydropower generation, for water supply and flood management purposes. Existing measures that are implemented during O&M under the Existing Condition would continue to be implemented under the No Project Alternative. As such, impacts associated with unstable geologic units or soils under the No Project Alternative would be **less than significant**.

Narrows Impact GEO-NP-4: Operations of existing Narrows Project facilities that are located on expansive soils, creating substantial direct or indirect risk to life or property.

Existing operations of YRDP Narrows Project facilities, expansive soils. Therefore, impacts in the No Project Alternative related to expansive soils would be **less than significant**.

Narrows Impact GEO-NP-5: Operation of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

No construction work would occur under the No Project Alternative; therefore, no new alternative wastewater disposal systems would be proposed. Existing septic systems, which are typically located on soils that are capable of adequately supporting the disposal and percolation of waste, would continue to operate as they currently do under the Existing Condition. Therefore, there would be **no impact** related to the disposal of wastewater.

Narrows Impact GEO-NP-6: Operation of existing Narrows facilities, which would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

No construction work would occur under the No Project Alternative and no new ground-disturbing activities that could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature would occur. Therefore, there would be **no impact** related to paleontological resources.

16.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensing) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

16.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

Impacts to geologic and soil resources, particularly those related to ground disturbance, are typically assessed on individual sites. Each site and project can have unique conditions that dictate how impacts to geologic and soil resources should be assessed. For this reason, with the exception of cumulative impacts related to erosion, the geographic scope of the analysis of cumulative impacts on geology and soils is limited to the Project Area and its immediate adjacent area.

The geographic scope for the cumulative analysis related to soil erosion extends downstream of the lower Yuba River and includes the lower Feather River, the lower Sacramento River and the Delta. The erosion of soils exposed by ground disturbance activities during construction can lead to downstream impacts, as sediment is carried in storm runoff to these other areas.

Only a limited numbers of projects with the potential to cumulatively impact geologic and soil resources are specifically considered qualitatively in this cumulative impacts analysis. These include the following:

FERC Hydropower Projects in the Yuba River Watershed

- South Feather Power Project (FERC Project 2088-068) Relicensing
- Yuba-Bear Hydroelectric Project (Yuba-Bear Project) (FERC Project No. 2266) Relicensing,
- Upper Drum-Spaulding Hydroelectric Projects (FERC No. 2310)
- Lower Drum Hydroelectric Project (FERC No. 14531) Relicensing

Flood Control Projects

- NBB Dam ARC Spillway Project (ARC Spillway Project)
- USACE NBB Dam and Reservoir Water Control Manual (WCM) Update

Ecosystem Restoration and Fisheries Improvement Projects

- Bay-Delta Water Quality Control Plan Update

- North Yuba Forest Partnership
- Yuba Foothills Healthy Forest Project
- Upper Yuba Headwaters Forest Restoration Project
- ‘Inimim Forest Restoration Project
- Yuba Roadside Fuel Treatment Project
- Lower Yuba River Accord Water Transfer Program Extension

These projects are described in Chapter 4 and their impacts related to geology and soils are addressed below. For the purposes of this analysis, the lower Yuba River area of analysis also includes the lower Feather River from its confluence with the Yuba River, the lower Sacramento River from its confluence with the Feather River, and the Sacramento-San Joaquin Delta.

The FERC Hydropower Projects, the flood control projects, and the ecosystem restoration and fisheries improvement projects upstream of Englebright Dam may involve construction or ground-disturbing activities (i.e. grading, excavation, grubbing, and other earth-moving activities). These projects may involve construction activities that could affect geologic and soil conditions. Furthermore, some ecosystem restoration and fisheries improvement projects would involve forest thinning and habitat restoration projects would reduce the amount of vegetation and result in ground disturbance. Some of these projects also include structures that could be affected by seismicity.

Similar to the Proposed Projects, these projects are subject to applicable policies and regulations that manage environmental impacts and hazards related to geologic and soil conditions. These regulations include, but are not limited to, the Yuba County Grading Ordinance, the Nevada County Grading Ordinance, the Sierra County Grading Ordinance, the California Building Code, and the Forest Service Handbook. Any proposed septic tanks or alternative wastewater disposal systems would be subject to any applicable agencies’ Local Agency Management Plan.

Few projects considered in the cumulative analysis of geologic resources and soils are located within the intersecting area of the geographic scope of the cumulative analysis and the Lower Yuba River area. Similar to the projects in the areas upstream of the Englebright Dam, projects involving construction or ground disturbing activities would be subject to applicable policies and regulations that manage geologic and soil conditions.

Impacts relative to seismic hazards and other geologic and soil conditions, such as fault rupture, ground shaking, liquefaction, landslides, subsidence, collapsible soils, and expansive soils, are generally site specific and not cumulative in nature. A hazard caused by on-site soil or geologic conditions typically does not affect conditions on another site. Where multiple projects may occur on the same site over time, compliance with applicable policies, laws, and regulations typically mandates the use of design standards to manage potential risks. Similar to the Proposed Projects, the other projects considered in this cumulative analysis would be subject to local policies and ordinances intended to reduce impacts related to substantial adverse effects from seismic activity, erosion and loss of topsoil, unstable geologic units, expansive soils, the use of alternative wastewater systems.

As discussed in Section 16.2.4, paleontological resources are unlikely to occur within the Project Area and the geographic scope of the cumulative analysis area for geologic and soil resources. Due to their low likelihood of occurrence, projects within this area are unlikely to cumulatively contribute to impacts on paleontological resources.

Projects considered within this cumulative analysis would involve ground disturbance activities, including vegetation clearing, grading, and excavation, that could cumulatively contribute sediment to downstream waterbodies. A cumulatively considerable amount of sediment could result in a significant impact on the water quality of downstream waterbodies. However, these projects are required to meet water quality standards and comply with water quality measures contained in federal, state, and regional requirements. Furthermore, waterbodies immediately downstream of the Project Area have not been identified by the SWRCB as being impaired by sediment. This indicates that other projects in this cumulative analysis have not contributed a cumulative impact related to erosion.

As explained above, the Proposed Projects would not result in any significant geology and soils impacts. Through compliance with applicable regulations, the cumulative effects of the Proposed Projects in combination with other assessed projects would not be anticipated to cause significant environmental impacts related to geologic and soil resources.

YRDP Cumulative Impact GEO-PP-1: Potential for significant cumulative geology and soils impacts resulting from the YRDP.

As explained above, under the Cumulative Condition, including the Proposed Projects, there would be a less than significant cumulative geology and soils impact relative to the Existing Condition. Therefore, the Proposed YRDP Project would result in a **less than significant cumulative impact** on geology and soils.

Narrows Cumulative Impact GEO-PP-1: Potential for significant cumulative geology and soils impacts resulting from the operations of Narrows Project facilities.

As explained above, under the Cumulative Condition, including the Proposed Projects, there would be a less than significant cumulative geology and soils impact relative to the Existing Condition. Therefore, the Proposed Narrows Project would result in **a less than significant cumulative impact** to geology and soils.

16.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on public services are listed in the Cumulative Condition section above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 16.5.2 above. Alternative 1 would include all of same construction and non-flow O&M activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include differences in flow-based operations, those differences in flows would not significantly affect geology and soils impacts, as explained in the project-level analysis

above, and therefore would not significantly change the analysis and conclusions in Section 16.5.2. For the same reasons explained in Section 16.5.2 above, the Cumulative Condition, including Alternative 1, would not result in a significant geology and soils impact relative to the Existing Condition.

YRDP Cumulative Impact GEO-Alt1-1: Potential for significant cumulative geology and soils impacts resulting from the YRDP.

As explained above, under the Cumulative Condition, including Alternative 1, there would be a less than significant cumulative geology and soils impact relative to the Existing Condition. Therefore, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** on geology and soils.

Narrows Cumulative Impact GEO-Alt1-2: Potential for significant cumulative geology and soils impacts resulting from the operations of Narrows Project facilities.

As explained above, under the Cumulative Condition, including Alternative 1, there would be a less than significant cumulative geology and soils impact relative to the Existing Condition. Therefore, Narrows Project operations under Alternative 1 would result in **a less than significant cumulative impact** to geology and soils.

16.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on public services are listed in the Cumulative Condition section above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 16.5.2 above. Alternative 2 would include all of same construction and non-flow O&M activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include differences in flow-based operations, those differences in flows would not significantly affect geology and soils impacts, as explained in the project-level analysis above, and therefore would not significantly change the analysis and conclusions in Section 16.5.2. For the same reasons explained in Section 16.5.2 above, the Cumulative Condition, including Alternative 2, would not result in a significant geology and soils impact relative to the Existing Condition.

YRDP Cumulative Impact GEO-Alt2-1: Potential for significant cumulative geology and soils impacts resulting from the YRDP.

As explained above, under the Cumulative Condition, including Alternative 2, there would be a less than significant cumulative geology and soils impact relative to the Existing Condition. Therefore, YRDP construction and operations under Alternative 2 would result in a **less than significant cumulative impact** on geology and soils.

Narrows Cumulative Impact GEO-Alt2-2: Potential for significant cumulative geology and soils impacts resulting from the operations of Narrows facilities.

As explained above, under the Cumulative Condition, including Alternative 2, there would be a less than significant cumulative geology and soils impact relative to the Existing Condition. Therefore, Narrows Project operations under Alternative 2 would result in a **less than significant cumulative** impact to geology and soils.

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CHAPTER 17

HAZARDS AND HAZARDOUS MATERIALS

17.1 Introduction

This section describes the environmental setting and regulatory framework for hazards and hazardous materials, and it identifies direct and indirect impacts of the Proposed Projects during construction and O&M. In particular, the analysis focuses on hazards and hazardous materials that may be present in the Project Area and the use of hazardous materials during implementation of the Proposed Projects construction and O&M.

The area of analysis for hazards and hazardous materials impacts is defined as the Project Area and a 500-foot buffer to account for potential adjoining properties with soil and groundwater contamination. However, the potential for hazards and hazardous material effects are not limited to the immediate analysis area but can extend to locations where removed materials are transported after use and to sensitive receptors that may be nearby. Therefore, transport of materials and sensitive receptors are also considered when addressing the potential for effects.

17.2 Environmental Setting

17.2.1 Hazardous Materials

During routine O&M of the Proposed Projects stream gage stations, diversion dams, access roads, and reservoir, Yuba Water employs hazardous materials. Additionally, when hazardous materials are required for periodic maintenance work, Yuba Water transports them to sites within the larger watershed. The quantities of hazardous materials used or transported for any task at a given time are small—typically about a gallon or less—and do not exceed Business Plan or any other regulatory threshold values (see Regulatory Framework below). No hazardous materials are stored for future use on NFS land. Spent materials are transported to Yuba Water's maintenance facilities associated with the powerhouses for proper disposal. No disposal of hazardous materials occurs within the proposed FERC Project Boundary or on NFS land.

Within the proposed FERC Projects Boundary west and downstream of NFS land, Yuba Water stores hazardous materials, hazardous material cleanup materials, and equipment at five Project facilities: New Colgate Powerhouse, New Colgate Penstock Shutoff Valve, New Bullards Bar Dam, Narrows 2 Powerhouse, and Cottage Creek Water Treatment Plant. For the first four facilities, Yuba Water has implemented site-specific Spill Prevention, Control, and Countermeasure (SPCC) Plans. Additionally, Business Plans have been established for three of these facilities: New Colgate Powerhouse, Narrows 2 Powerhouse, and Cottage Creek Water Treatment Plant (see Regulatory Framework below for discussion of SPCC Plans and Business Plans). Specific descriptions of primary and secondary containment for the stored hazardous materials at each facility are outlined in Yuba Water's respective SPCC Plans and Business Plans for these facilities. Emerald Cove Marina maintains its own hazardous materials management plan for its facilities and operations.

Table 17.2-1 furnishes a location-based description of hazardous materials that may be used, stored, or transported for routine YRDP O&M (YCWA 2023a).

Table 17.2-1. Yuba River Development Project facilities and hazardous materials stored, used or transported for routine operation and maintenance.

Hazardous Materials	Location	Yuba Water O&M Activity	Quantity
FACILITIES LOCATED ON NFS LAND			
Lead acetate	Appurtenant Facilities — Streamflow Gage Stations	The solar panel at each gage station has a lead acetate battery. 12-15 stations watershed-wide. Within each station, each battery has its own spill containment. At least monthly, Yuba Water tests batteries and communications and inspects battery and spill containment basin.	Minimal [1]
Gasoline, paint, solvent	Appurtenant Facilities - Project Roads	No hazardous materials are stored on site. The hazardous materials that may be brought on site during maintenance include gas powered weed eater, gas powered chain saw, gas can, spray paint, hot pads and gasoline refueling vehicle (truck). Road maintenance is performed as needed. Road maintenance can include cleaning road for slides, transporting workers to hand-clear vegetation from road drainage structures and reservoir shoreline access—land approach. Vegetation control is performed manually on NFS land and does not introduce hazardous materials.	Minimal [1]
Gasoline, fire extinguishers	New Bullards Bar Reservoir	Reservoir maintenance, such as debris removal, is performed via water. Yuba Water also accesses the reservoir shoreline by boat, i.e. shoreline access - water approach.	Minimal [1]
Diesel fuel, gasoline, hydraulic fluid, brake fluid, antifreeze, lubricants, paint, acetylene, compressed gas	Log Cabin Diversion Dam	No hazardous materials are stored on site. The hazardous materials that may be brought on site during maintenance include those usually associated with the O&M of vehicles and machinery. Other materials considered hazardous are chemicals used in portable toilets and the associated human waste. Vegetation control is performed manually on NFS land and does not introduce hazardous materials. Dam maintenance performed as needed--0 to 3 times a year. Equipment and materials brought to site for each maintenance activity. Dam maintenance can consist of one or all of the following: • Exercising the release valves, using a lawnmower-sized gasoline powered engine brought to the dam for that specific purpose. • Painting handrails and other weathered structures. • Patching the dam itself with grout or concrete. • Occasional relicensing study (Entrainment) equipment, using two to three small (100 gallon) propane tanks at each site to power an electric generator. A portable toilet is brought to the job site. If needed, vegetation control is performed manually. Grout and concrete may be brought to the site for dam repair. Paint for painting safety rails. Acetylene for welding. Compressed gas canisters	Minimal [1]
	Our House Diversion Dam		Minimal [1]
Day Use Areas:	Dark Day Picnic Area		Primarily maintained by Forest Service
None	Sunset Vista Point		

Hazardous Materials	Location	Yuba Water O&M Activity	Quantity
	Dam Overlook	Maintenance performed by Forest Service. Annual Pre-Season cleaning of roads and pads by Yuba Water crews, using pickup trucks and hand tools.	
	Moran Road Day Use Area		
	Dark Day Boat Launch		
Campgrounds:	Hornswoggle Group		
None	Schoolhouse		
	Dark Day		
	Garden Point Boat-In		
	Madrone Cove Boat-In		
	Frenchy Point Boat-In		
	Undeveloped Shoreline Areas		
FACILITIES NOT LOCATED ON NFS LAND			
Propane	Garden Point Cove	Debris management. Wood deemed a potential hazard to boating is collected at Garden Point Cove. On an annual basis, following receipt of NFS permit, propane is used to ignite burn pile.	<55 gallons [2]
Herbicides and pesticides	Access Roads and Facility Exteriors	In accordance with state and county regulations.	<55 gallons [2]
Gasoline and diesel fuel, paints, solvents, lubricants and petroleum products.	Emerald Cove Marina	Boat fueling	Not applicable; maintained by Emerald Cove Marina, Inc.
	Boat Maintenance Yard	Yard is located 0.25 miles north of reservoir	
None	Cottage Creek Boat Launch	None	None
Chlorine solution tank	Cottage Creek Water Treatment Plant	Drinking water treatment and distribution	>55 gallons [3]
Gasoline and diesel fuel, paints, solvents, brake fluid, antifreeze, lubricants and petroleum products, acetylene, compressed gas	Narrows 2 Facility	Powerhouse operations, including limited vehicle maintenance and machine shop	>55 gallons [3]
	New Colgate Facility		>55 gallons [3]
Toilet deodorizer [2]	Comfort Stations	On-water comfort station management requires transfer and pumping of waste and deodorizer	None

[1] Minimal = Quantities are generally small (<5 gallons) and are brought to the facility by Yuba Water infrequently.
[2] See Section 17.3. Not a regulated quantity.
[3] See Section 17.3. Yuba Water maintains a Hazardous Materials Business Plan for this facility (see Regulatory Framework below).
Source: YCWA 2023a.

17.2.1.1 Previous Site Investigations

Database searches were conducted on the Department of Toxic Substances Control (DTSC) EnviroStor and the SWRCB GeoTracker databases to identify any active and closed sites where releases or spills of hazardous materials have occurred within the analysis area (DTSC 2023a, SWRCB 2023). The search performed for this assessment was conducted in November 2023 and yielded one site in the Project Area: the Bullards Bar Center approximately 0.10 miles east of the Proposed Projects site. Historically, it was recognized as a Leaking Underground Storage Tank site and underwent remediation as directed by the CVRWQCB. The site cleanup was completed in August 1996, and the case has been closed (SWRCB 2023).

17.2.1.2 Other Relevant Information Related to Hazards

Asbestos occurs naturally in certain geologic settings in California. Most commonly, asbestos occurrences are associated with serpentinite, commonly called serpentine, and partially serpentinized ultramafic (i.e., rich in magnesium and iron) rocks. Inhalation of asbestos fibers released by the breaking of these rocks may cause cancer. The area surrounding the Proposed Projects site is not designated by the California Department of Conservation as likely to contain asbestos (DOC 2000).

There are no schools located within 0.25 miles of the Project Area. The nearest school is Camptonville Union Elementary School in the community of Camptonville, which is approximately one mile away from the nearest facility (Log Cabin Diversion Dam) and 3 miles away from the nearest proposed new construction (Kelly Ridge Campground).

There are no airports located within 2 miles of the Project Area. The nearest airport is the privately owned Milhous Ranch Airport, which is located approximately 5.5 miles southeast of the Project Area. The Milhous Ranch Airport does not have a Comprehensive Land Use Plan, which is required of public airports. The nearest public airport is Nevada County Airport, near the city of Grass Valley approximately 15 miles southeast of New Bullards Bar Reservoir. Beale Air Force Base, a military installation, is approximately 20 miles south of the reservoir.

According to the CalFire Fire Hazard Severity (FHSZ) Zone Map for Nevada, Sierra, and Yuba Counties, the Proposed Projects are in a Very High FHSZ (CAL FIRE 2022). Chapter 18, Wildfire, discusses potential wildfire hazards and FHSZs in more detail.

17.3 Regulatory Setting

17.3.1 Federal

17.3.1.1 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), enacted in 1976, is a federal law that establishes a framework for the proper management of both hazardous and non-hazardous solid waste. It outlines the waste management program mandated by Congress, granting the EPA the authority to develop and oversee the RCRA program. This encompasses the entire waste management process, from generation and transportation to treatment, storage, and disposal of hazardous waste.

The EPA creates regulations, guidance, and policies to ensure the safe management and cleanup of solid and hazardous waste, as well as programs that promote source reduction and beneficial reuse. EPA has developed a comprehensive program to ensure the safe management of hazardous waste from generation to final disposal (cradle-to-grave). RCRA Subtitle C regulations establish criteria for hazardous waste generators, transporters, and treatment, storage, and disposal facilities, including permitting requirements, enforcement, and corrective action or cleanup. RCRA Subtitle D is dedicated to non-hazardous solid waste requirements, prohibiting open dumping of waste and setting federal criteria for the operation of municipal and industrial waste landfills.

Under Subtitle C, EPA may authorize states to implement key provisions of hazardous waste requirements in lieu of the federal government. If a state program does not exist, EPA directly implements the hazardous waste requirements in that state.

17.3.1.2 Hazardous Materials Transportation Act (49 U.S.C. Section 1801 et seq.)

The Hazardous Materials Transportation Act was established in 1975 as the primary federal law governing the transportation of hazardous materials in the United States. Its primary goal is to enhance the protection of life and property during the transportation of hazardous materials in commerce by improving the regulatory and enforcement authority of the Secretary of Transportation. The U.S. Department of Transportation defines a hazardous material as a substance or material that is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has been designated as hazardous under the federal hazardous materials transportation law (49 U.S.C. 5103).

17.3.1.3 Clean Water Act (33 U.S.C. 1251 et seq.)

The Federal Water Pollution Control Act of 1948 was the first major United States law to address water pollution. Upon amendments made in 1972, the law became commonly known as the Clean Water Act, or CWA (33 U.S.C. 1251). The CWA established the structure for regulating discharge of pollutants into Waters of the United States and regulating quality standards for surface waters.

As noted in Chapter 10, Non-Fisheries Biological Resources, CWA Section 404 requires a permit for the discharge of dredged or fill material into Waters of the United States, including wetlands. To comply with CWA Section 404, a permittee must document the measures taken to avoid and minimize impacts on waters of the United States and provide compensatory mitigation for any unavoidable impacts.

Under CWA Section 401, federal agencies are not authorized to issue a permit or license for any activity that may result in discharges to Waters of the United States, unless a state or tribe where the discharge originates either grants or waives water quality certification. Decisions made by states or tribes are based on a project's compliance with EPA water quality standards, along with applicable effluent limitations guidelines, new source performance standards, toxic pollutant restrictions, and any other appropriate requirements of state or tribal law. In California, the SWRCB is the primary regulatory authority for CWA Section 401 requirements.

17.3.1.4 Emergency Planning and Community Right to Know Act (40 C.F.R. 350 et seq.)

The Emergency Planning and Community Right-to-Know Act of 1986 was authorized by Title III of the Superfund Amendments and Reauthorization Act to assist communities in preparing for chemical emergencies. This law mandates that industries disclose information about the storage, usage, and discharge of specific chemicals to federal, state, tribal, territorial, and/or local governments. Additionally, it requires these reports to be used by these governments to prepare for and protect their communities from potential risks.

17.3.1.5 Spill Prevention, Control, and Countermeasure Regulation (40 C.F.R. Part 112)

The SPCC Regulation was originally issued in 1973 as the Oil Pollution Prevention regulation, under the authority of Section 311 of the Clean Water Act. The goal of this regulation is to prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil. The regulation requires these facilities to develop and implement SPCC Plans and establishes procedures, methods, and equipment requirements. These SPCC Plans are required to be periodically updated, every five years or in the event of changes to the stored materials or spill protection methods. As noted in the Environmental Setting, Yuba Water has prepared SPCC Plans for four facilities: New Colgate Powerhouse, New Colgate Penstock Shutoff Valve, New Bullards Bar Dam, and Narrows 2 Powerhouse.

17.3.2 State

17.3.2.1 California Hazardous Waste Control Law (HSC Section 25501 et seq.)

The California Hazardous Waste Control Law is administered by the California Environmental Protection Agency (Cal EPA) to regulate hazardous wastes. The California Hazardous Waste Control Law lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills. The waste generated by the Proposed Projects would be subject to conformance with the Hazardous Waste Control Law.

17.3.2.2 Carpenter-Presley-Tanner Hazardous Substances Account Act (HSC Section 25300 et seq.)

The Carpenter-Presley-Tanner Hazardous Substance Account Act establishes a program authorizing certain responses to releases of hazardous substances, including spills and hazardous waste disposal sites, which pose a threat to the public health or the environment, and imposes liability for hazardous substance removal or remedial actions. The law imposes liability for hazardous substance removal or remedial actions and requires the DTSC to adopt, by regulation, criteria for the selection and for the priority ranking of hazardous substance release sites for removal or remedial action under the act.

17.3.2.3 Cortese List (Government Code Section 65962.5)

The provisions in Government Code Section 65962.5, which became effective in 1992, are commonly referred to as the "Cortese List," after the legislator who authored the legislation enacting these provisions. The list, or a site's presence on the list, has bearing on the local permitting process as well as on compliance with CEQA. Section 65962.5(a) requires DTSC to compile and update as appropriate, but at least annually, and submit to the Secretary for Environmental Protection a list of the following:

1. All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.
2. All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.
3. All information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.
4. All sites listed pursuant to Section 25356 of the Health and Safety Code.
5. All sites included in the Abandoned Site Assessment Program.

Other provisions of Government Code Section 65962.5 require specific lists to be prepared by the Department of Health Services and the SWRCB and submitted to the Secretary for Environmental Protection. Also, the local enforcement agency, as designated pursuant to Section 18051 of C.C.R. Title 14, shall submit annually to the California Integrated Waste Management Board a list of all solid waste disposal facilities from which there is a known migration of hazardous waste. The Secretary for Environmental Protection shall consolidate the information submitted pursuant to this section and distribute it in a timely fashion to each city and county in which sites on the lists are located, and to any other person upon request.

While Government Code Section 65962.5 refers to the preparation of a "list," many changes have occurred related to web-based information access since 1992, and this information is now largely available on the websites of the responsible organizations. Those requesting a copy of the Cortese List are referred directly to the appropriate information resources contained on the websites of the boards or departments that are referenced in the statute (Cal EPA 2023).

17.3.2.4 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) was created in 1993 by SB 1082. The statutes and regulations are found in HSC Division 20, Chapter 6.11, and in California Code of Regulations, Title 27, Division 1, Subdivision 4, Chapter 1. The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs:

- Aboveground Petroleum Storage Tank Program
- Hazardous Materials Business Plan Program and the Area Plan Program

- California Accidental Release Prevention Program
- Hazardous Materials Management Plan/Hazardous Material Inventory Statement Program
- Hazardous Waste Generator/Tiered Permitting Program
- Underground Storage Tank Program

The Unified Program requires the Cal EPA to certify a local government agency, known as a Certified Unified Program Agency (CUPA), as able to implement all the required environmental programs and to consolidate, coordinate, and make them consistent within their jurisdiction. Cal EPA is required to review local programs on a three-year or more often cycle to ensure the capabilities of the CUPA and its adherence to all program requirements.

All three counties that are part of the Project Area have CUPAs, which are housed within their respective County Departments of Environmental Health. In accordance with the Hazardous Materials Business Plan Program, all three CUPAs require businesses to disclose all hazardous material and waste that are used, handled or stored at their facility above the following reporting thresholds:

- 55 gallons for liquids
- 500 pounds for solids
- 200 cubic feet for compressed gases

As noted in the Environmental Setting, Yuba Water has prepared Hazardous Materials Business Plans for the Cottage Creek Water Treatment Plant, Narrows 2 Facility, and New Colgate Facility. These plans are a tool used for communication and coordination between workers, emergency personnel, and others on the handling of hazardous materials (YCWA 2023b).

17.3.2.5 California Emergency Services Act (HSC Section 8550 et seq.)

The California Emergency Services Act provides the basic authority for conducting emergency operations following a proclamation of emergency by the governor and/or appropriate local authorities. Local government and district emergency plans are considered extensions of the California Emergency Plan, established in accordance with the Emergency Services Act.

The California Emergency Management Agency is the State agency responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. The Emergency Management Agency regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials (C.C.R. Title 19). It is also the lead State agency for emergency management and is responsible for coordinating the State-level response to emergencies and disasters.

17.3.3 Local

17.3.3.1 Yuba County 2030 General Plan

The following goals and policies from the Yuba County 2030 General Plan Public Health and Safety Element are relevant to the proposed project (Yuba County 2011b).

GOAL HS 7: Hazards and Hazardous Materials. Protect the community from the harmful effects of hazards and hazardous materials.

- **Policy HS 7.1.** The County will assess risks associated with public investments and other County-initiated actions, and new private developments shall access and mitigate hazardous materials risks and ensure safe handling, storage, and movement in compliance with local, State, and Federal safety standards.

GOAL HS 9: Emergency Preparedness and Response. Minimize the loss of life and damage to property from natural and human-caused hazards by ensuring adequate emergency routes and response.

- **Policy HS 9.1.** The County will review development projects, plans, and public investment decisions to ensure consistency with the Multi-Hazard Mitigation Plan.
- **Policy HS 9.3.** The County will coordinate with the California Department of Transportation (Caltrans) to maintain Highways 20, 70, 49, and 65 in the lower half of the County and the County will maintain Marysville Road, Frenchtown Road, and La Porte-Quincy Road in the upper half of the County as primary emergency access and evacuation routes and improve other roads, as necessary, such as Plumas Arboga Road, to create additional evacuation routes.

The Yuba County General Plan also designates primary evacuation routes in the county, including areas within which the Project Area is located. A map of these evacuation routes is available in Chapter 18, Wildfire, as wildfires have occurred in the Project Area and vicinity and are considered the most likely events that would prompt evacuations from there.

17.3.3.2 Yuba County Emergency Operations Plan

The Yuba County Emergency Operations Plan (EOP) addresses the County's planned response to emergencies associated with natural, man-made and technological disasters. It provides an overview of operational concepts and identifies components of the County’s emergency management organization within the Standardized Emergency Management System and the National Incident Management System. It further describes the overall responsibilities of the local, State, and Federal entities for protecting life and property and assuring the overall well-being of the population (Yuba County 2015).

17.3.3.3 Yuba County Local Hazard Mitigation Plan

The Yuba County Local Hazard Mitigation Plan, updated in 2021, is a comprehensive county-wide effort to reduce or eliminate long-term risk to people and property from hazards. Yuba County, the incorporated cities of Marysville and Wheatland, and nine special districts participated in the preparation of this plan. The plan identified several hazards for which a mitigation strategy was developed, including wildfire. However, hazards associated with hazardous materials and airport operations were not further analyzed in the plan due to past or anticipated infrequency of occurrence (Yuba County 2021). Plans related to wildfire are discussed in Chapter 18, Wildfire.

17.3.3.4 Nevada County Emergency Operations Plan

Similar to the Yuba County EOP, the Nevada County EOP delineates the preparation for, emergency response to, and recovery from the effects of a natural disaster or a manmade incident occurring wholly within or affecting any unincorporated area of Nevada County. It delineates the responsibilities of first responders and other response support organizations, and it establishes the Nevada County Emergency Services Organization to support initial and extended response and to direct recovery from emergencies in or affecting the unincorporated County. It is also intended to mitigate future disasters and emergency incidents. Annex E of the EOP contains the Hazardous Materials Area Plan, which establishes the policies, responsibilities, and procedures required to protect the health and safety of Nevada County's citizens, the environment, and public and private property from the effects of hazardous materials emergency incidents (Nevada County 2011).

17.3.3.5 Nevada County Local Hazard Mitigation Plan

The Nevada County Local Hazard Mitigation Plan, updated in 2017 and in the process of being updated again, has the same purpose as the Yuba County plan—to reduce or eliminate long-term risk to people and property from hazards. Nevada County, its three incorporated communities (Grass Valley, Nevada City, and Truckee), and three special districts participated in the preparation of this plan. Among the hazards identified as likely to occur was hazardous material transportation. The plan states that this hazard would have a "limited" geographical extent and magnitude/severity. However, this hazard is considered "likely" to occur in the future. Interstate 80, the Union Pacific railroad, and the Kinder Morgan petroleum pipeline are the three major transportation routes by which tons of hazardous materials are transported through Nevada County (Nevada County 2017). None of these routes pass by the Project Area.

17.3.3.6 Sierra County Local Hazard Mitigation Plan

The Sierra County Local Hazard Mitigation Plan, adopted in 2012, has the same purpose as the other local hazard mitigation plans. Among the hazards identified in the plan as likely to occur were wildfires, which the plan states have a "High" potential impact and are a priority hazard (Sierra County 2012). Chapter 18, Wildfire, discusses this in more detail. The plan did not identify any potential hazards associated with hazardous materials. Also, it should be noted that, unlike Yuba and Nevada Counties, Sierra County does not have an EOP.

17.4 Impact Assessment Methodology

A desktop analysis was completed to collect and analyze data related to hazards and hazardous materials in the analysis area. Information was collected on known hazardous material sites within the analysis area and GIS data and aerial imagery were used to identify the hazardous sites within the analysis area. Additionally, the following resources were used for data collection:

- EnviroStor Database (DTSC 2023a)
- GeoTracker Database (SWRCB 2023)

The potential impacts from construction, O&M of the Proposed Projects on hazards and hazardous materials were evaluated qualitatively using known hazardous materials site data using regulations

that would be applicable to the Proposed Projects. As the Narrows Project would not involve any construction activities, construction impacts related to the Narrows Project are not analyzed.

17.4.1 Impact Indicators and Significance Criteria

For hazards and hazardous materials, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, impacts relating to hazards and hazardous materials would be considered significant if the Proposed Projects would:

- **Impact HAZ-1:** Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- **Impact HAZ-2**: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- **Impact HAZ-3:** Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- **Impact HAZ-4**: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- **Impact HAZ-5:** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.
- **Impact HAZ-6:** Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

As noted, there are no schools within one-quarter mile of the Project Area. The nearest school is Camptonville Union Elementary School, which is approximately 3 miles away from the nearest proposed new construction. Also, as noted, the Proposed Projects are not located within an airport land use plan or within 2 miles of a public airport or public use airport. As noted, the nearest public use airport is the privately owned Milhous Ranch Airport, located approximately 5.5 miles to the southeast. The analysis area does not contain an active site that is included on the Cortese List, compiled pursuant to Government Code Section 65962.5 (DTSC 2023b). Because of this, hazard issues related to nearby schools, airports, and hazardous materials sites are not discussed further in this chapter.

In addition, Chapter 18, Wildfire, analyzes potential impacts related to wildland fires. Therefore, this chapter contains no further discussion of this topic.

17.5 Environmental Impact Analysis

17.5.1 Proposed Projects Compared to the Existing Condition

YRDP Impact HAZ-PP-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

YRDP construction improvements would include the use of heavy construction equipment such as an excavator, an air compressor, haul trucks, truck-mounted cranes, pickup trucks, a construction office trailer, and miscellaneous equipment. The Proposed Projects would involve the transport and use of common construction materials such as vehicle fuels, grease, asphalt, concrete, and lubricants, all of which could be potentially hazardous. The use of these materials, including their routine transport and disposal, carries the potential for an accidental release into the local environment.

YRDP construction projects would be required to implement the Hazardous Materials Management Plan, which includes measures such as secondary containment and spill kits that would reduce the risk spills and potential for releases that enter the environment (YCWA 2019). Also, as part of the required Construction General Permit, construction projects would be required to implement a Stormwater Pollution Prevention Plan (SWPPP), which would prescribe BMPs that reduce the likelihood and severity of the release of construction related pollutants like fuel and grease.

The proposed operation of YRDP facilities would be similar to existing operations. YRDP maintenance improvements would include the use of heavy O&M work equipment such as an excavator, an air compressor, one or two trucks, two truck-mounted cranes, pickup trucks, a construction office trailer, and miscellaneous equipment. As indicated in Table 17-1, operations and maintenance may involve the use of lead acetate, diesel fuel, gasoline, hydraulic fluid, brake fluid, antifreeze, lubricants, paint, acetylene, compressed gas, and fire extinguishers. Accidental spills or releases of these materials into the environment could be potentially hazardous.

As noted, Yuba Water has implemented SPCC Plans and Hazardous Material Business Plans at specific facilities. The plans contain specific descriptions of primary and secondary containment for the stored hazardous materials at each facility. In addition, YRDP operations would be required to implement the Hazardous Materials Management Plan, including measures such as secondary containment and spill kits, and a SWPPP with BMPs.

With the implementation of the Hazardous Materials Management Plan and the SWPPP, YRDP construction and operational impacts would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact HAZ-PP-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through

reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Construction and operation activities within the Project Area would occur adjacent to several bodies of water, including the Yuba River, the New Bullards Bar Reservoir, and Englebright Lake. The use of equipment during construction and operation activities could have the potential to accidentally release hazardous materials into the environment. If hazardous materials were released into the environment, these water bodies could quickly disperse hazardous materials over a large area.

During construction, the amount of hazardous materials onsite would be limited. Furthermore, construction activities would be required to adhere to all applicable regulations regarding hazardous materials storage and handling, which would be implemented as part of the required SWPPP.

As noted, Yuba Water has implemented SPCC Plans and Hazardous Material Business Plans at specific facilities. The plans contain specific descriptions of primary and secondary containment for the stored hazardous materials at each facility. In addition, YRDP operations would be required to implement the Hazardous Materials Management Plan, including measures such as secondary containment and spill kits, and a SWPPP with BMPs.

With the implementation of the Hazardous Materials Management Plan and the SWPPP, YRDP construction and operational impacts would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact HAZ-PP-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Yuba, Nevada, and Sierra Counties have all developed Local Hazard Mitigation Plans that guide agencies in the implementation of effective hazard mitigation strategies, projects, and measures to protect lives and reduce damage to property and the environment. In addition, Nevada and Yuba Counties each have developed an EOP that addresses the County's planned response to emergencies associated with natural, man-made, and technological disasters. Nevada County has also developed the Nevada County Hazardous Materials Area Plan to protect the health and safety of Nevada County's citizens, the environment, and public and private property from the effects of hazardous materials emergency incidents. Furthermore, the Yuba County General Plan, Policy HS9.3, identifies primary emergency access and evacuation routes that should be maintained for use in a disaster or emergency. As noted, Chapter 18, Wildfire, contains a map of primary evacuation routes in Yuba County.

Within the analysis area, Marysville Road and Highway 49 are identified as primary emergency access and evacuation routes. In addition, in the Emergency Action Plan required under the FERC license for the YRDP, Marysville Road is identified as the access road to the New Bullards Bar Dam for emergency purposes, primarily from Dobbins and secondarily from Camptonville (YCWA 2006).

The Proposed Project does not propose any long-term closures of designated emergency access and evacuation routes within the analysis area. During construction and operation activities, large equipment may temporarily use these roadways that are designated as evacuation routes to travel to and from the Project Area. Any disruption to roadway traffic would be temporary and minor in nature.

As described in Chapter 2, Project Description, Yuba Water has developed a list of Primary Roads and Trails that would be maintained under Yuba Water's Transportation System Management Plan. Most of the affected roads would be USFS or private roads and would serve mainly Yuba Water facilities, including recreation areas. Improvements on these roads would facilitate emergency vehicle access to and evacuations from these facilities if necessary.

Construction of proposed YRDP facilities and operations of existing YRDP facilities would not significantly impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact HAZ-PP-1: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Operation of the Narrows Project facilities would remain largely unchanged, including existing use of hazardous materials. Any hazardous material use at the Narrows Project facilities would be subject to the Revised Hazardous Materials Management Plan. No recreation facilities either exist or are proposed. Therefore, Narrows Project operational impacts related to the routine transport, use, or disposal of hazardous materials would be **less than significant**. No CEQA mitigation is required.

Narrows Impact HAZ-PP-2: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Operation of the Narrows Project facilities would remain largely unchanged, including existing use of hazardous materials. Narrows Project operations would be required to implement the Hazardous Materials Management Plan, including measures such as secondary containment and spill kits. No recreation facilities either exist or are proposed. Therefore, Narrows Project operational impacts related to hazardous material use, including spills and releases, would be **less than significant**. No CEQA mitigation is required.

Narrows Impact HAZ-PP-3: Operations of existing Narrows Project facilities that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Operation of the Narrows Project facilities would remain largely unchanged. No recreation facilities either exist or are proposed. Road improvements are not proposed in the Narrows Project area, and no public or private roads would be affected. Therefore, Narrows Project operations would have **no impact** related to emergency response plans or emergency evacuation plans. No CEQA mitigation is required.

17.5.2 Alternative 1 Compared to the Existing Condition

YRDP Impact HAZ-Alt1-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

YRDP construction improvements under Alternative 1 would be the same as under the Proposed Projects. Similar to the Proposed Project scenario, Alternative 1 would involve the transport and use of common construction materials such as vehicle fuels, grease, asphalt, concrete, and lubricants, all of which could be potentially hazardous. With the implementation of the Revised Hazardous Materials Management Plan and the SWPPP, YRDP construction impacts of Alternative 1 would be the same as those of the Proposed Projects.

YRDP non-flow operations and maintenance activities under Alternative 1 would be the same as those under the Proposed Projects. As noted, Yuba Water has implemented SPCC Plans and Hazardous Material Business Plans at specific facilities. The Hazardous Materials Management Plan would also be implemented as part of Alternative 1.

For the same reasons explained for YRDP Impact HAZ-PP-1, with the implementation of the Hazardous Materials Management Plan and the SWPPP, YRDP construction and operational impacts under Alternative 1 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be **less than significant**.

YRDP Impact HAZ-Alt1-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

As referenced above, construction and non-flow operation activities under Alternative 1 would be the same as those under the Proposed Projects. For the same reasons explained for YRDP Impact HAZ-PP-2, with the implementation of the Hazardous Materials Management Plan and the SWPPP, YRDP construction and operational impacts would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts would be **less than significant**.

YRDP Impact HAZ-Alt1-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Alternative 1 YRDP construction and non-flow operations would be the same as those under the Proposed Projects. For the same reasons explained for YRDP Impact HAZ-PP-3, impacts would be **less than significant**.

Narrows Impact HAZ-Alt1-1: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Under Alternative 1, operation of the Narrows Project facilities would remain largely unchanged, including existing use of hazardous materials. Any hazardous material use at the Narrows Project

facilities would be subject to the Revised Hazardous Materials Management Plan. No recreation facilities either exist or are proposed. Therefore, Narrows Project operational impacts related to the routine transport, use, or disposal of hazardous materials would be **less than significant**.

Narrows Impact HAZ-Alt1-2: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Under Alternative 1, operation of the Narrows Project facilities would remain largely unchanged, including existing use of hazardous materials. Narrows Project operations would be required to implement the Hazardous Materials Management Plan, including measures such as secondary containment and spill kits. No recreation facilities either exist or are proposed. Therefore, Narrows Project operational impacts related to hazardous material use, including spills and releases, would be **less than significant**.

Narrows Impact HAZ-Alt1-3: Operations of existing Narrows Project facilities that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Under Alternative 1, operation of the Narrows Project facilities would remain largely unchanged. No recreation facilities either exist or are proposed. Road improvements are not proposed in the Narrows Project area, and no public or private roads would be affected. Therefore, Narrows Project operations would have **no impact** related to emergency response plans or emergency evacuation plans.

17.5.3 Alternative 2 Compared to the Existing Condition

YRDP Impact HAZ-Alt2-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

YRDP construction improvements under Alternative 2 would be the same as under the Proposed Projects. Similar to the Proposed Project scenario, Alternative 2 would involve the transport and use of common construction materials such as vehicle fuels, grease, asphalt, concrete, and lubricants, all of which could be potentially hazardous. With the implementation of the Revised Hazardous Materials Management Plan and the SWPPP, YRDP construction impacts of Alternative 2 would be the same as those of the Proposed Projects.

YRDP non-flow O&M activities under Alternative 2 would be the same as those under the Proposed Projects. As noted, Yuba Water has implemented SPCC Plans and Hazardous Material Business Plans at specific facilities. The Hazardous Materials Management Plan would also be implemented as part of Alternative 2.

For the same reasons explained for YRDP Impact HAZ-PP-1, with the implementation of the Hazardous Materials Management Plan and the SWPPP, YRDP construction and operational impacts under Alternative 2 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be **less than significant**.

YRDP Impact HAZ-Alt2-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

As referenced above, construction and non-flow operation activities under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained for YRDP Impact HAZ-PP-2, with the implementation of the Hazardous Materials Management Plan and the SWPPP, YRDP construction and operational impacts would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts would be **less than significant**.

YRDP Impact HAZ-Alt2-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Alternative 2 YRDP construction and non-flow operations would be the same as those under the Proposed Projects. For the same reasons explained for YRDP Impact HAZ-PP-3, impacts would be **less than significant**.

Narrows Impact HAZ-Alt2-1: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Under Alternative 2, operation of the Narrows Project facilities would remain largely unchanged, including existing use of hazardous materials. Any hazardous material use at the Narrows Project facilities would be subject to the Revised Hazardous Materials Management Plan. No recreation facilities either exist or are proposed. Therefore, Narrows Project operational impacts related to the routine transport, use, or disposal of hazardous materials would be **less than significant**.

Narrows Impact HAZ-Alt2-2: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Under Alternative 2, operation of the Narrows Project facilities would remain largely unchanged, including existing use of hazardous materials. Narrows Project operations would be required to implement the Hazardous Materials Management Plan, including measures such as secondary containment and spill kits. No recreation facilities either exist or are proposed. Therefore, Narrows Project operational impacts related to hazardous material use, including spills and releases, would be **less than significant**.

Narrows Impact HAZ-Alt2-3: Operations of existing Narrows Project facilities that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Under Alternative 2, operation of the Narrows Project facilities would remain largely unchanged. No recreation facilities either exist or are proposed. Road improvements are not proposed in the Narrows Project area, and no public or private roads would be affected. Therefore, Narrows Project operations would have **no impact** related to emergency response plans or emergency evacuation plans.

17.5.4 No Project Alternative Compared to the Existing Condition

YRDP Impact HAZ-NP-1: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

No construction work would occur under the No Project Alternative. Therefore, no construction equipment that may involve the use of potentially hazardous materials would be present. Aside from the complete reduction in hydropower generation, YRDP operations under the No Project Alternative would not substantially change when compared to the Existing Condition and therefore would not introduce any new hazards related to the routine transport, use, or disposal of hazardous materials. Therefore, the No Project Alternative would have a **less than significant** impact.

YRDP Impact HAZ-NP-2: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

No construction work would occur under the No Project Alternative. Therefore, no construction equipment that may involve the use of potentially hazardous materials would be present. Aside from the complete reduction in hydropower generation, YRDP operations under the No Project Alternative would not substantially change when compared to the Existing Condition and therefore would not introduce any new hazards related to the release of hazardous materials into the environment. Therefore, the No Project Alternative would have a **less than significant** impact.

YRDP Impact HAZ-NP-3: Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

No construction work would occur under the No Project Alternative. Aside from the complete reduction in hydropower generation, YRDP operations under the No Project Alternative would not substantially change when compared to the Existing Condition and therefore would not introduce any new hazards related to impairment of or interference with an emergency response or evacuation plan. Therefore, the No Project Alternative would have **no impact** on the implementation of an adopted emergency response plan or emergency evacuation plan.

Narrows Impact HAZ-NP-1: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Aside from the complete reduction in hydropower generation, operation of the Narrows Project facilities under the No Project Alternative would remain largely unchanged and therefore would not introduce any new hazards related to the routine transport, use, or disposal of hazardous materials. Therefore, the No Project Alternative would have a **less than significant** impact.

Narrows Impact HAZ-PP-2: Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Aside from the complete reduction in hydropower generation, operation of the Narrows Project facilities under the No Project Alternative would remain largely unchanged and therefore would not introduce any new hazards related to the release of hazardous materials into the environment. Therefore, the No Project Alternative would have a **less than significant** impact related to the routine transport, use, or disposal of hazardous materials.

Narrows Impact HAZ-PP-3: Operations of existing Narrows facilities that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Aside from the complete reduction in hydropower generation, operation of the Narrows Project facilities under the No Project Alternative would remain largely unchanged and therefore would not introduce any new hazards related to impairment of or interference with an emergency response or evacuation plan. Therefore, Narrows Project operations would have **no impact** related to emergency response plans or emergency evacuation plans.

17.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

17.6.1 Cumulative Condition

The assessment of cumulative impacts related to hazardous materials typically accounts for the potential of affecting adjoining properties with soil and groundwater contamination. Similar to the analysis of the Proposed Projects, Alternative 1, and Alternative 2, the geographic scope of the cumulative analysis is defined as the Project Area and a 500-foot buffer.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in increased demand for public services in the geographical scope and therefore would not contribute cumulative impacts to public services. These include forest thinning, fisheries improvement, and ecosystem restoration projects. Water supply and conveyance projects would also be excluded.

Only a limited number of projects with the potential to cumulatively impact hazards and hazardous materials are specifically considered qualitatively in this cumulative impacts analysis. These include the following:

- FERC Hydropower Projects in the Yuba River Watershed:
    - *Yuba-Bear, Upper Drum-Spaulding, and the Lower Drum Hydroelectric Projects (Yuba-Bear/Drum-Spaulding Relicensings)*
- Flood Control Projects:
    - *NBB Dam ARC Spillway Project (ARC Spillway Project)*
    - *USACE NBB Dam and Reservoir Water Control Manual (WCM) Update*
    - *Marysville Ring Levee*
- Ecosystem Restoration and Fisheries Improvement Projects:
    - *Bay-Delta Water Quality Control Plan Update*
    - *North Yuba Forest Partnership*
    - *Yuba Foothills Healthy Forest Project*
    - *Upper Yuba Headwaters Forest Restoration Project*
    - *'Inimim Forest Restoration Project*
    - *Yuba Roadside Fuel Treatment Project*
    - *Lower Yuba River Accord Water Transfer Program Extension*
- Other Local Projects in the Yuba Region:
    - *Yuba City Boat Ramp Sediment Removal Project (Yuba City Boat Ramp Project)*
    - *Camptonville Biomass Plant*
    - *Pumpline Solar Project*

These projects are described in Chapter 4, and their impacts related to hazards and hazardous materials are addressed below.

17.6.2 Cumulative Condition with Proposed Projects Compared to the Existing Condition

Projects considered within this cumulative analysis would involve the transport and use of common construction materials that could be potentially hazardous. Similar to the Proposed Projects, these projects would be required to prepare a SWPPP. Other regulations would also be applicable to the handling of any significant amounts of hazardous materials, such as the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, which would be anticipated to mitigate risk. Therefore, no cumulative level of risk related to the routine transport, use, disposal, or foreseeable upset and accident conditions involving the release of hazardous materials is currently present.

Some of the projects considered within this cumulative analysis have the potential to disrupt the implementation of adopted emergency response plans or emergency evacuation plans. For example, the ARC Spillway Project could disrupt the ability to travel along Marysville Road. Where applicable, these projects have or would implement mitigation to reduce impacts on

established evacuation routes or other measures implemented in safety plans, such as the implementation of a Traffic Safety Plan. Therefore, there is no cumulative level of risk related to an adopted emergency response plan or emergency evacuation plan.

As explained above, the Proposed Projects would not have any significant impacts related to hazards. None of the other past, present, or future cumulative projects would have impacts that would combine with the less-than-significant impacts of the Proposed Projects to create a significant cumulative impact. Therefore, under the Cumulative Condition, including the Proposed Projects, the cumulative hazards and hazardous materials impacts would be less than significant.

YRDP Cumulative Impact HAZ-PP-1: Potential for significant cumulative hazards and hazardous materials impacts resulting from the construction or operation of YRDP facilities.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative hazards and hazardous materials impacts would be less than significant. Therefore, the Proposed YRDP Project would have a **less than significant cumulative impact** related to hazards or hazardous materials.

Narrows Cumulative Impact HAZ-PP-2: Potential for significant hazards and hazardous materials impacts resulting from the operations of Narrows facilities.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative hazards and hazardous materials impacts would be less than significant. Therefore, the Proposed Narrows Project would have a **less than significant cumulative impact** related to hazards or hazardous materials.

17.6.3 Cumulative Condition with Alternative 1 Compared to the Existing Condition

The Alternative 1 Cumulative Condition would include the same past, present, and future cumulative projects identified in Section 17.6.1 above. Alternative 1 includes the same construction and non-flow operation activities as the Proposed Projects and would therefore contribute similarly to the Cumulative Condition. Accordingly, for the same reasons discussed in Section 17.6.2, under the Cumulative Condition, including Alternative 1, the cumulative hazards and hazardous materials impacts would be less than significant.

YRDP Cumulative Impact HAZ-Alt1-1: Potential for significant cumulative hazards and hazardous materials impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative hazards and hazardous materials impacts would be less than significant. Therefore, YRDP under Alternative 1 would have a **less than significant cumulative impact** related to hazards or hazardous materials.

Narrows Cumulative Impact HAZ-Alt1-2: Potential for significant hazards and hazardous materials impacts resulting from the operations of Narrows facilities.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative hazards and hazardous materials impacts would be less than significant. Therefore, Narrows Project

operations under Alternative 1 would have a **less than significant cumulative impact** related to hazards or hazardous materials.

17.6.4 Cumulative Condition with Alternative 2 Compared to the Existing Condition

The Alternative 2 Cumulative Condition would include the same past, present, and future cumulative projects identified in Section 17.6.1 above. Alternative 2 includes the same construction and non-flow operation activities as the Proposed Projects and would therefore contribute similarly to the Cumulative Condition. Accordingly, for the same reasons discussed in Section 17.6.2, under the Cumulative Condition, including Alternative 2, the cumulative hazards and hazardous materials impacts would be less than significant.

YRDP Cumulative Impact HAZ-Alt2-1: Potential for significant cumulative hazards and hazardous materials impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative hazards and hazardous materials impacts would be less than significant. Therefore, YRDP under Alternative 2 would have a **less than significant cumulative impact** related to hazards or hazardous materials.

Narrows Cumulative Impact HAZ-Alt2-1: Potential for significant hazards and hazardous materials impacts resulting from the operations of Narrows facilities

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative hazards and hazardous materials impacts would be less than significant. Therefore, Narrows Project operations under Alternative 2 would have a **less than significant cumulative impact** related to hazards or hazardous materials.

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CHAPTER 18

WILDFIRE

18.1 Introduction

This chapter describes the environmental setting and regulatory framework for wildfire, and it identifies direct, indirect and cumulative impacts of the Proposed Projects. The wildfire analysis focuses on emergency response and evacuation, wildfire risk and hazards in the Project Area that may be exacerbated as a result of the YRDP Relicensing Project's construction and O&M, as well as the Narrows Relicensing Project's O&M activities. The geographic extent of the environmental setting considered for wildfire refers to the areas within and in the general vicinity of the Project Area.

18.2 Environmental Setting

18.2.1 Wildfire Background

A wildfire is an uncontrolled fire that burns vegetation in wildland or rural areas, can spread into communities or developed areas, and requires fire suppression. Wildfires can be ignited by natural forces such as lightning, or by human activity such as powerlines, smoking, campfires, equipment use, and arson. California is recognized as one of the most fire-prone regions in the world due to the combination of complex terrain, climate, fire-adapted ecosystem, history of fire suppression, and community development patterns, all of which have contributed to extensive wildfires. Flammable expanses of brush, diseased timberland, overstocked forests, hot and dry summers, extreme topography, intense wind events, summer lightning storms, and human acts all contribute to California's wildfire threat. Another contributor is the placement of development adjacent to or intermixed with vegetated areas, known as the "wildland/urban interface" (Nevada County 2024).

Wildfire behavior is based on four primary factors: topography, weather, fuels, and human influences (California State Parks 2024):

- Topographic features such as slope influence a fire's intensity, direction, and rate of spread. Fires burning in flat or gently sloping areas tend to burn more slowly than fires on steep slopes. As noted in Chapter 16, Geology and Soils, there are no Zones of Required Investigation for landslides identified in the Project Area. However, a major landslide during a storm event in the winter of 2005–06 caused severe damage to higher-elevation county roads and special district facilities, especially along Marysville Road and around New Bullards Bar Reservoir (Yuba County 2011).
- Weather conditions influence the potential for fire ignition, rates of spread, intensity, and the direction toward which a fire burns. Temperature, relative humidity, and wind are the variables used to predict fire behavior.
- Fuels refer to all combustible material available to burn on an area of land. Each fuel has its own burning characteristics, based on factors such as moisture content, volume, arrangement, crown cover, and size.

- Human influence on wildfire is broad and can be substantial. It includes direct influences such as the ignition and suppression of fires, and indirect influence through alterations in land use patterns that support modified vegetative regimes. Human ignitions include a multitude of sources, including escapes from debris- and brush-clearing fires, electrical equipment malfunctions, campfire escapes, smoking, fireworks, vehicles, and arson. Areas where human influence is concentrated, but not so much that the environment reflects an urban setting, greatly exacerbate the risk of wildfire due to the potential capacity for human-caused ignitions and fire spread.

Human influence more directly controls fire frequency than area burned, because anthropogenic ignitions are responsible for a large number of ignitions. However, once started, fire spread and behavior become a function of fuel characteristics, terrain, and weather conditions (California State Parks 2024). The following sections describe these four factors as they exist in Areas Upstream from Englebright Dam and the Lower Yuba River.

18.2.1.1 Areas Upstream of Englebright Dam

18.2.1.1.1 Topography

As described in Chapter 12, Visual Resources, the facilities and features of the YRDP are in the northern Sierra Nevada mountain range, and more specifically within the subregion of flat ridge tops and steep valley zone. The terrain is rolling to flat ridge tops interspersed with deep valleys. The current Yuba River Basin drains the northwestern Sierra Nevada through a series of deep canyons cut by mountain streams, separated by high, steep-sided ridges (FERC 2019). The Project Area upstream of Englebright Dam is consistent with the general topography of the area, except that it has a large body of water – New Bullards Bar Reservoir.

18.2.1.1.2 Weather

The area has a Mediterranean climate, characterized by hot dry summers and mild to cool winters. There is an annual dry season from approximately May to October. Precipitation is primarily in the form of rain, the amount of which increases with elevation. Snowfall occasionally occurs at higher elevations but infrequently.

18.2.1.1.3 Fuels

As noted in Chapter 12, Visual Resources, the Project Area is in a forested area of the Sierra Nevada foothills in Yuba, Sierra and Nevada Counties. In 2012, Yuba Water conducted surveys to characterize the plant communities within the YRDP area. The study provides comprehensive insights into the general vegetation composition at multiple sites, including the Narrows 2 Powerhouse, New Colgate Powerhouse, the shores of the New Bullards Bar Reservoir and Dam, Our House Diversion Dam, and Log Cabin Diversion Dam. These communities primarily comprise upland vegetation alliances, with limited areas of wetland, riparian, or littoral habitats. The vegetation in these areas include riparian zones, blue oak/annual grasslands, gray pine/interior live oak, ponderosa pine/incense cedar, Douglas fir, and canyon live oak. While any significant amount of vegetation presents a potential wildfire risk, the main concern has been the proliferation of non-native invasive plants, which generate higher fuel loads (FERC 2019).

It should be noted that large woody material (LWM) accumulates in New Bullards Bar Reservoir. Yuba Water collects this LWM from the reservoir and disposes of it by burning. The collected LWM could be another potential source of fuel. LWM collection and disposal has been an ongoing activity conducted by Yuba Water. Moreover, for any work that includes burning debris, Yuba Water obtains the necessary permits and approvals from the appropriate agency, which may require Yuba Water to have specialized equipment on-site and only burn during specific times of the year (FERC 2019). There is no record of any wildfires caused by LWM burning. Chapter 24, Utilities, discusses disposal of LWM in more detail.

18.2.1.1.4 Human Influence

As described in Chapter 12, Visual Resources, the area above Englebright Dam is predominantly rural and contains scattered residential and commercial buildings. There are few communities of note in the area, such as Camptonville, Challenge, Dobbins, and Oregon House. However, the YRDP facilities in the Project Area include campgrounds, day use areas, and boat launches, which attract seasonal visitors.

According to the Yuba Water website, more than 116,000 visitors recreate each year at the YRDP recreation facilities. The latest available data, presented in Chapter 11, Recreation, confirms the website's total, with YRDP recreation facilities generating 116,630 Recreation Days in 2012. A Recreation Day is each visit by a person to a development for recreation purposes during any portion of a 24-hour period. Based on information used in the air quality analysis for Chapter 15, Air Quality (see Appendix 15C), the number of vehicle-days (i.e., the number of vehicles visiting the recreation facility during any portion of a 24-hour period) generated by the recreation facilities in 2012 was 69,838, of which 57,407 occurred during the peak season.

18.2.1.2 Lower Yuba River

18.2.1.2.1 Topography

In the area immediately downstream of Englebright Dam, the topography is the same as that in the areas above Englebright Dam. However, as the elevation lowers, slopes become less steep, and the terrain becomes more hilly. Also, the associated floodplain begins to broaden. From Daguerre Point Dam, the Yuba River enters the Central Valley region, an area consisting mainly of farmland and grazing ranges and is generally flat,

18.2.1.2.2 Weather

Weather conditions in the Lower Yuba River are the same as those of the areas above Englebright Dam in terms of climate and annual dry season. Likewise, precipitation is primarily in the form of rain, the amount of which increases with elevation. In the lower elevations, temperatures tend to be hotter in the summer months, with valley locations exceeding 100 degrees Fahrenheit on occasion.

18.2.1.2.3 Fuels

As described in Chapter 12, Visual Resources, the Narrows Project facilities are in the narrow canyon transition zone between the Central Valley ecoregion to the lower elevations of the Sierra

Foothills ecoregion, characterized by open rolling terrain, with vegetation dominated by grasslands, interspersed with oak woodlands, chaparral, and rock outcrops. As the elevation lowers, riparian vegetation consisting of oak, willow, and Fremont cottonwood becomes more predominant, with oak trees and grassland located behind the riparian vegetation, In the Yuba Goldfields area, grasslands predominate. The mix of oak/willow/cottonwood riparian trees and grasslands continues to the confluence with the Feather River, although urban development and agricultural lands are the main features of the landscape along this segment.

18.2.1.2.4 Human Influence

As noted above, urban development and agricultural lands are the main land uses along the segment of the Yuba River from approximately the Yuba Goldfields to the confluence with the Feather River. Upstream from the Yuba Goldfields to Englebright Dam, there is very little development other than the communities of Timbuctoo, Smartsville, and Sicard Flat. Hammon Grove Park, a County park across from the Yuba Goldfields could potentially draw a significant number of people. Downstream of the foothill region, the Yuba River enters the valley, an area of low wildfire risk.

18.2.2 Wildfire History

On an annual basis, typically between May through October, the foothill areas surrounding the Project Area face a serious threat from wildland fires. However, wildfires that have been especially large and destructive are a relatively recent occurrence. In Yuba County, where most of the YRDP and Narrows Project facilities are located, wildfires have prompted the second-highest number of state and/or federal disaster declarations between 1950 and 2021, behind only floods. However, from 1988 to 2021, there have been more wildfire events (nine) prompting disaster declarations than flood events (eight) (Yuba County 2021).

While the Project Area has been spared the massive, destructive wildfires that have occurred elsewhere in the Sierra Foothills region, several wildfires have occurred in the Project Area, mainly in the areas upstream of Englebright Dam. These include the Williams Fire of 1997, the Pendola Fire around New Bullards Bar Reservoir in 1999, and the Bullards incident in 2010 (Yuba Fire Safe Council 2025. As noted in Chapter 2, Project Description, the 2010 fire burned a portion of the Cottage Creek Picnic Area. More recently, the 2017 Cascade Fire burned 264 structures and killed four people in the Loma Rica area of Yuba County, and the 2020 Bear Fire ran along the northern portions of Yuba County. A 1959 wildfire swept through southwestern Sierra County near the Our House Diversion Dam (Yuba Fire Safe Council 2025).

18.2.3 Wildfire Suppression

As described in more detail in Chapter 23, Public Services, fire protection services in the Project Area and vicinity are provided by the California Department of Forestry and Fire Protection (CalFire), the Forest Service, and local community fire districts. CalFire provides fire protection services to most of the rural unincorporated areas outside of National Forest lands, which are served by the Forest Service. Although the services of CalFire and the Forest Service are essentially limited to their responsibility areas, they will assist other fire protection agencies during a major incident, particularly wildfires.

Yuba Water does not possess large fire suppression equipment, such as fire trucks and helicopters, suitable for wildfires within the Project Area. The fire suppression equipment owned by Yuba Water primarily includes fire extinguishers, permanently installed CO_2 systems within powerhouses, a water trailer, back-pack water tanks, shovels, picks, and axes. In the event of an emergency, Yuba Water notifies appropriate response agencies such as CalFire or the Forest Service. The fire suppression equipment Yuba Water does have is limited, mainly fire extinguishers in buildings and portable equipment used by work crews involved in activities that may potentially necessitate fire suppression equipment beyond hand-held extinguishers.

While equipment for suppression is limited, water from all YRDP reservoirs is available to agencies responding to wildland fires in the vicinity. Yuba Water has personnel available to provide technical information/support for USFS fire operations in and adjacent to the Project Area. In the event of fires caused by Yuba Water activities, employees and contractors will promptly respond to contain and extinguish the fire safely, if circumstances allow.

18.2.4 Fire Hazard Severity Zones

CalFire is required by law to identify Fire Hazard Severity Zones (FHSZs) in California, based on the severity of fire hazard that is expected to prevail. FHSZ maps evaluate wildfire hazards, which are the physical conditions that create a likelihood and expected fire behavior over a 30- to 50-year period without considering short-term modifications such as fuel reduction effort (CalFire 2022). Among other uses, FHSZ maps can be used for the following purposes: implementing wildland-urban interface building standards for new construction, natural hazard real estate disclosure at time of sale, 100-foot defensible space clearance requirements around buildings, and property development standards such as road widths, water supply, and signage consideration in city and county general plans (CalFire 2022).

The FHSZ maps are developed using a science-based, field-tested computer model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior, such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and weather. There are three categories of FHSZs corresponding to increasing severity of fire hazard: Moderate, High, and Very High.

FHSZs are applied to State Responsibility Areas (SRAs). An SRA is an area where the State of California has financial responsibility for wildland fire protection and prevention; CalFire is responsible for fire prevention and suppression (CalFire 2022). Two areas not covered by FHSZ maps are Local Responsibility Areas (LRAs) and Federal Responsibility Areas (FRAs). LRAs are incorporated cities, urban regions, agricultural lands, and portions of the desert where the local government is responsible for wildfire protection, typically provided by city fire departments, fire protection districts, counties, and by CalFire under contract. FRAs cover areas under federal ownership or management, such as National Forests and military bases.

The Project Area is mostly within SRAs and FRAs, the latter consisting of mainly NFS land. The FHSZs identified in the area are typically in the category of Very High, with some areas in a High FHSZ (Figure 18.2.1). There are no areas designated LRAs, and no areas are located outside an FHSZ.

18.2.5 Evacuation Routes

The California Attorney General's Office states that the addition of new development into high wildfire risk areas may impact the evacuation of the existing population in the area, including visitors and possibly livestock, along with the ability of emergency responders to simultaneously access the area to fight wildfire. In turn, this can impact the risk and extent of large-scale fire spread and community safety within and around the new development. Therefore, an EIR should evaluate these impacts, both during construction and over the life of the project (California Attorney General 2022).

Impacts of the Proposed Projects on emergency vehicle access and evacuations were analyzed in Chapter 17, Hazards and Hazardous Materials. This chapter describes potential evacuations due to wildfires and access by emergency vehicles. The main concern with the Proposed Projects regarding potential wildfire evacuations are the recreation facilities at New Bullards Bar Reservoir. Since neither the Log Cabin Diversion Dam, the Our House Diversion Dam, nor the Narrows Project have recreation facilities or any other development outside of water and hydropower facilities, they are not considered further in this analysis.

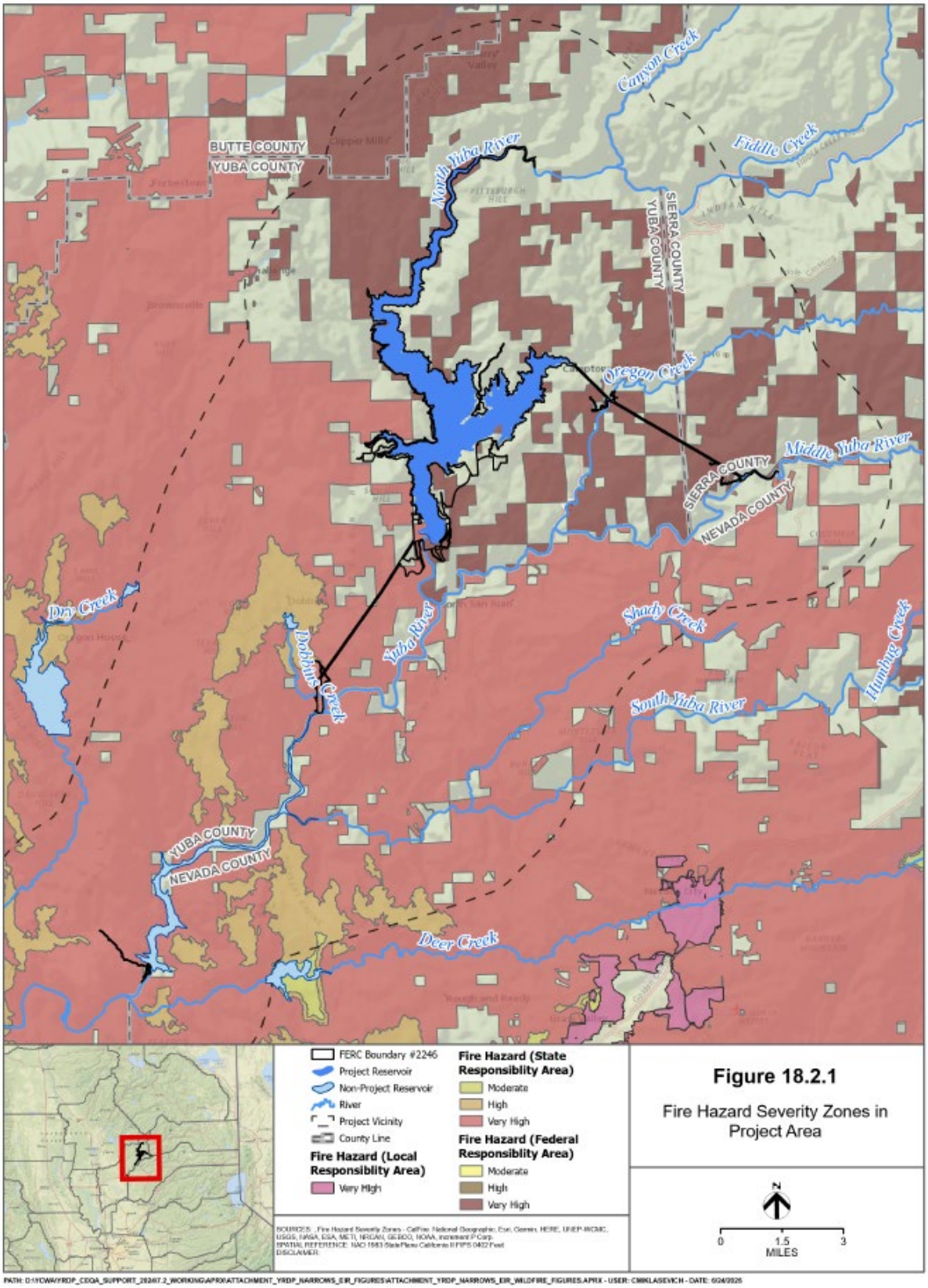

Figure 18.2-1. Fire Hazard Severity Zones in Project Area.

The New Bullards Bar Reservoir recreation facilities, both existing and proposed, are in Yuba County. The Yuba County General Plan has designated primary evacuation routes throughout the County. For the Project Area upstream from Englebright Dam, the main evacuation routes are State Highway 49, Marysville Road, and Willow Glen Road (Figure 18.3-1). For the Lower Yuba River, the main evacuation route is State Highway 20.

18.3 Regulatory Setting

18.3.1 Federal

18.3.1.1 The National Strategy

The Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME Act) directed the DOI and U.S. Department of Agriculture (USDA) to develop a national cohesive wildland fire management strategy to comprehensively address wildland fire management across all lands in the United States. The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy (National Strategy) (DOI and USDA 2014) is the result of a collaborative effort by Federal, state, local, and tribal governments and nongovernmental partners and public stakeholders. The National Strategy recognizes and accepts fire as a natural process necessary for the maintenance of many ecosystems and strives to reduce conflicts between fire-prone landscapes and people (DOI and USDA 2014). Specifically, the National Strategy identifies the following primary goals:

- **Restoration and maintenance of landscapes:** Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
- **Fire-adapted communities**: Human populations and infrastructure can withstand a wildfire without loss of life and property.
- **Wildfire response:** All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

The National Strategy guides federal direction for the state and local agencies responsible for fire protection in the vicinity of the Proposed Projects. The Proposed Projects will be held to the goals of the National Strategy.

18.3.1.2 Forest Service Manuals and Handbooks

Forest Service Manual 5100 covers various aspects of fire management, including wildfire prevention and mitigation, hazardous fuel management in wilderness areas, and wildfire preparedness. Forest Service Handbook 5100 provides more specific information on implementing the policies in Forest Service Manual 5100.

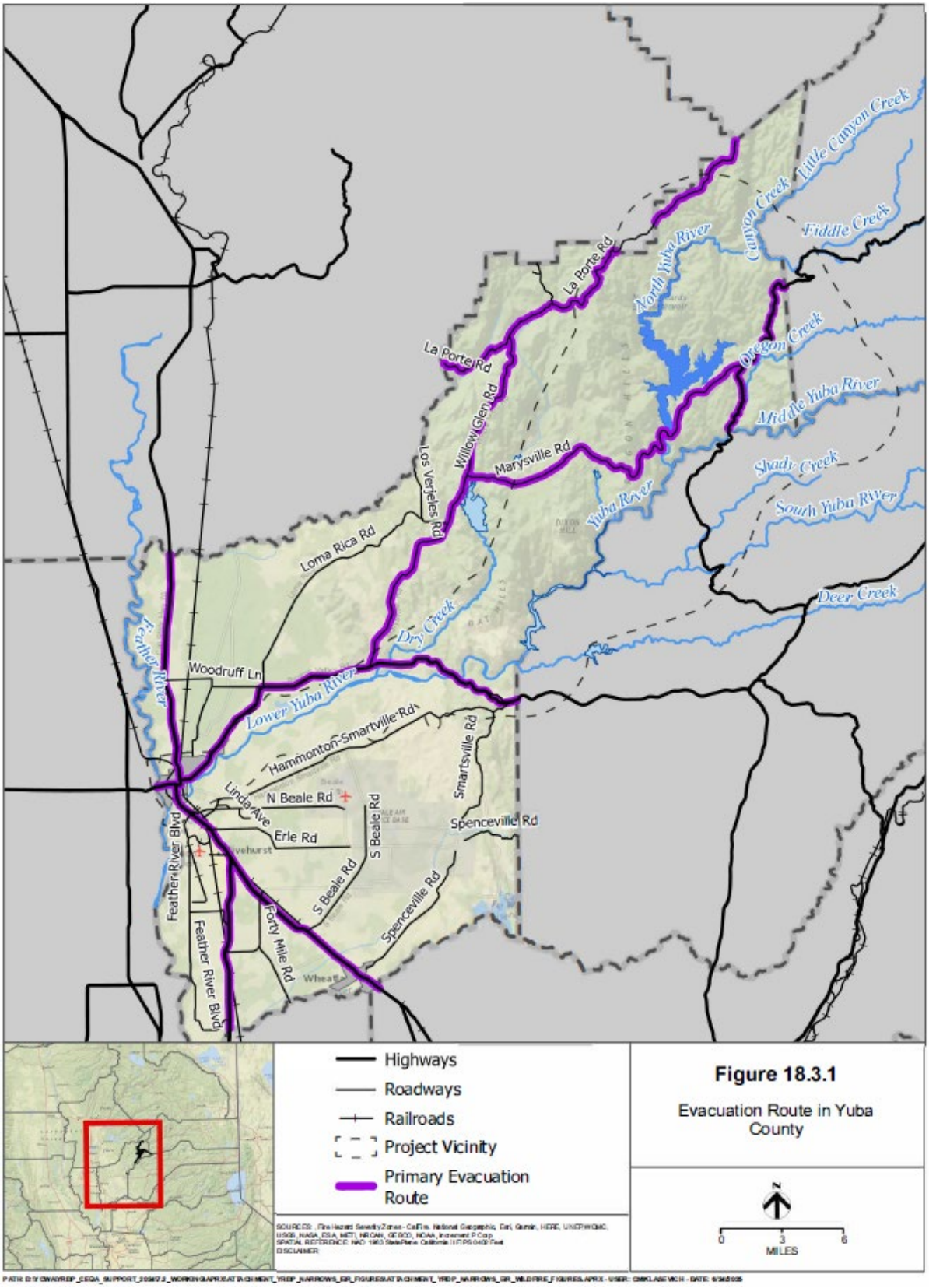

Figure 18.3-1. Evacuation Route in Yuba County.

Forest Service Manual 2300, Chapter 2330 addresses Forest Service planning, design, operation, and maintenance of developed recreation sites such as campgrounds, picnic areas, observation sites, developed swimming areas, and visitor and interpretive centers. Forest Service Handbook 2309.13, Chapter 10 sets forth the general principles of recreation site and facility design. In particular, Section 12.14 sets forth design guidelines for fire protection. These include:

- Where fires for cooking or warming purposes will be allowed at developed recreation sites, install fire-containing devices for proper fire control.
- Locate fire-containing devices at developed recreation sites away from trees, shrubs, and other flammable features.
- Construct and maintain a firebreak around facilities to reduce potential wildfire impacts.
- Use fire-resistant materials that are historically and architecturally consistent with the setting, as well as construction techniques, such as enclosing overhangs and eves, to minimize the risk of fire damage.
- Consult the National Fire Protection Association's Firewise Communities Program for locally appropriate planting and landscaping strategies.

18.3.1.3 Tahoe National Forest Land and Resource Management Plan

The Tahoe National Forest Land and Resource Management Plan (LRMP) was originally adopted in 1990 and intended to direct the management of the National Forest until 2005 (Tahoe National Forest 1990). The LRMP was subsequently amended in 2004 and again in 2011, and it is still used by USFS. The Tahoe National Forest management areas in the vicinity are the Oregon, Forty-Niner, and Bullards Management Areas, all administered by the Yuba River Ranger District based in Camptonville.

The LRMP acknowledges that the Tahoe National Forest has wildfire protection responsibility for approximately 1,237,700 acres, of which approximately 774,700 acres are NFS lands. Another 454,000 acres are SRA lands, protected under a Statewide contract with CalFire. The current fire management organization is a combination of suppression (initial attack), prevention, and detection resources located at various stations in the Tahoe National Forest. One of the goals of the LRMP is to protect resources from wildfire, commensurate with resource values, through fire management, including the treatment of fuels primarily through the use of prescribed fire and through utilization. Utilization involves the removal of slash, submerchantable trees (i.e., not of market quality), and previously dead and down material (Tahoe National Forest 1990).

18.3.1.4 Plumas National Forest Land and Resource Management Plan

The Plumas National Forest LRMP was originally adopted in 1988 and intended to direct the management of the National Forest for the next 10-15 years (Plumas National Forest 1988). The one Plumas National Forest management area in the vicinity is the Challenge Management Area, administered by the Feather River Ranger District based in Oroville in Butte County.

This LRMP acknowledges that the Plumas National Forest has wildfire protection responsibility for approximately 1,132,000 acres of NFS lands and 391,000 acres of private land by agreement with CalFire. The Plumas National Forest fire protection program has been adjusted to gradually shift away from the former policy that favored complete wildfire exclusion. Prescribed fire is used

as a fuel management tool to reduce fuels for wildfire hazard reduction, among other objectives. In future management, wildfire suppression response could be varied between surveillance, confinement, containment, or control, depending on the potential for damage. In addition, unplanned ignition of prescribed fire by lightning in designated Wilderness areas could be allowed for purposes of reducing unnatural accumulations of fuel (Plumas National Forest 1988). The nearest Wilderness land is the Bucks Lake Wilderness, approximately 35 miles north of New Bullards Bar Reservoir.

18.3.2 State

18.3.2.1 Strategic Fire Plan for California

The Strategic Fire Plan for California, developed by the Department of Forestry and Fire Protection, provides direction and guidance to CalFire and its 21 operational units. It is updated periodically, with the most recent version adopted in 2024.

The 2024 Strategic Fire Plan focuses mainly on the CalFire workforce, with goals addressing employee hiring and retention, promotion of a more equitable and diverse work culture, improvement of internal human resources processes, and improvement of physical and digital infrastructure. Another goal is to identify core capabilities and to strengthen operational capacity. The objectives associated with this goal include applying emerging technology to strengthen core operations, expanding natural resource management and fire prevention operations to meet the state's wildfire and forest resilience goals, and developing and completing a comprehensive assessment of fire protection capabilities, wildfire response standards, and values at risk to confirm the future placement of fire protection resources (CalFire 2024).

The 2024 Strategic Fire Plan also reviewed the 2019 Strategic Fire Plan, the most recent plan prior to adoption of the 2024 plan, and the key accomplishments in implementing the 2019 plan. CalFire advanced fire protection operations by increasing the number of year-round engines and firefighting personnel, enhanced aviation resources by expanding the aerial firefighting fleet, and enriched internal operations by increasing critical administrative and program support personnel and improving internal and external communication. It also stewarded healthy forests and safe communities by increasing pace and scale of prescribed fire and fuel-reduction activities, improving interagency data sharing, developing sophisticated web applications, and establishing tribal, forest health, and wildfire prevention grants (CalFire 2024).

18.3.2.2 California Fire Code

The California Fire Code (C.C.R. Title 24, Part 9) establishes minimum requirements to safeguard public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings. Chapter 33 of the code contains requirements for preserving fire safety during construction, such as to develop a pre-fire plan in coordination with the fire chief, maintain vehicle access for firefighting at construction sites, and meet requirements for safe operation of construction equipment powered by internal combustion engines.

18.3.2.3 California Public Resources Code

California Public Resources Code Section 4290 requires the State Board of Forestry and Fire Protection to adopt regulations implementing minimum fire safety standards related to defensible space that are applicable to SRA lands under the authority of CalFire, and to lands classified and designated as Very High FHSZs, The regulations shall include all of the following:

- Road standards for fire equipment access.
- Standards for signs identifying streets, roads, and buildings.
- Minimum private water supply reserves for emergency fire use.
- Fuel breaks and greenbelts.

The Board shall, on and after July 1, 2021, periodically update regulations for fuel breaks and greenbelts near communities to provide greater fire safety for the perimeters to all residential, commercial, and industrial building construction within SRAs and lands classified and designated as Very High FHSZs,

Public Resources Code Section 4427 states that, during any time of the year when burning permits are required in an area, no person shall use or operate any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices from which a spark, fire, or flame may originate, which is located on or near any forest-covered land, brush-covered land, or grass-covered land, without doing both of the following:

- First clearing away all flammable material, including snags, from the area around such operation for a distance of 10 feet.
- Maintain one serviceable round point shovel with an overall length of not less than forty-six (46) inches and one backpack pump water-type fire extinguisher fully equipped and ready for use at the immediate area during the operation.

Public Resources Code Section 4428 states that no person, with specified exceptions, shall use or operate any vehicle, machine, tool or equipment powered by an internal combustion engine operated on hydrocarbon fuels, in any industrial operation located on or near any forest, brush, or grass-covered land between April 1 and December 1 of any year, or at any other time when ground litter and vegetation will sustain combustion permitting the spread of fire, without providing and maintaining, for firefighting purposes only, suitable and serviceable tools in the amounts, manner and location prescribed in this section. These tools include a fire toolbox with specified tools, one or more serviceable chainsaws, one shovel and one ax for each rail speeder and passenger vehicle, and one shovel for any other vehicle used in the operation.

Public Resources Code Section 4431 states that, during any time of the year when burning permits are required in an area, no person shall use or operate or cause to be operated in the area any portable saw, auger, drill, tamper, or other portable tool powered by a gasoline-fueled internal combustion engine on or near any forest-covered land, brush-covered land, or grass-covered land, within 25 feet of any flammable material, without providing and maintaining at the immediate locations of use or operation of the saw or tool, for firefighting purposes one serviceable round point shovel, with an overall length of not less than 46 inches, or one serviceable fire extinguisher.

Public Resources Code Section 4442 states that no person shall use, operate, or allow to be used or operated, any internal combustion engine which uses hydrocarbon fuels on any forest-covered land, brush-covered land, or grass-covered land unless the engine is equipped with a spark arrester maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire pursuant to Public Resources Code Section 4443.

18.3.2.4 California Health and Safety Code

Division 12 of the California Health and Safety Code addresses fires and fire protection. Section 13025 sets forth general provisions for all equipment for fire protection purposes. Chapters 1.5 and 1.8 set forth requirements for portable fire extinguishers and automatic fire extinguisher systems, respectively.

18.3.3 Regional/Local

18.3.3.1 Yuba Foothills Community Wildfire Protection Plan

The Yuba Watershed Protection and Fire Safe Council, in collaboration with interested local parties and land management agencies, prepared the Yuba County Foothills Community Wildfire Protection Plan in 2014. This plan was updated as the Yuba Foothills Community Wildfire Protection Plan in 2025. The Community Wildfire Protection Plan provides a comprehensive, scientifically based assessment of the wildfire hazards and risks in the Yuba County foothills area, and it describes strategies based on this assessment to mitigate wildfire risks. Among the goals and objectives of the Community Wildfire Protection Plan are (Yuba Fire Safe Council 2025):

- Describe and assess the Project Area's general wildfire risk.
- Identify areas of critical risk, where a wildfire could potentially spread into developed areas.
- Identify specific fuel treatment projects and policy enforcement specifications that directly reduce the risk of wildfire in these critical areas.
- Identify areas with critical, high-risk for wildfire and develop targeted outreach to residents, informing them of wildfire risks and encouraging them to undertake hazard-reduction activities like annual mowing and brush clearing.
- Recommend potential policy improvements and public outreach initiatives to effectively increase wildfire preparedness and elevate the community's relationship with wildfire risk.

The Community Wildfire Protection Plan includes a Solutions and Proposed Projects chapter. This chapter describes wildfire mitigation strategies such as reducing ignitability of structures by defensible space and other measures, enhancing fire suppression capabilities, reducing hazardous fuels, and implementing education programs for residents. It also recommends roadside fuel reduction projects designated as "very high" priority, including along Marysville Road near New Bullards Bar Reservoir. Temporary Refuge Areas are also recommended, including a parking lot and boat ramp at New Bullards Bar Reservoir and Dark Day boat launch and parking lot (Yuba Fire Safe Council 2025).

18.3.3.2 Yuba County Code Section 8.50.080 – Fire Prevention

Yuba County Code Section 8.50.080 explicitly applies to the Bullards Bar Recreation Area, which is defined in the section as containing approximately 14,500 acres of forested lands and 4,600 acres of surface water in the New Bullards Bar Reservoir and the surrounding land to the top of the ridge nearest to the reservoir. All persons shall comply with the rules and regulations adopted pursuant to the authority of Title 16, Section 551, United States Code, by the Secretary of Agriculture for the protection against destruction by fire and depredation upon the public forests. Under Section 8.50.080, it is unlawful to light, build or maintain any open fire within the recreation area except in a camp stove or a fireplace provided, maintained or designated for such purpose, unless by authority of the Fire Protection Agency and authorized permit. Oil, butane, or gasoline camp stoves may be used in established camp sites or picnic areas where other stoves are provided, or in other areas where authorized by permit. It also is unlawful to discharge or set off on or within the recreation area any firecrackers, torpedoes, rockets, or other fireworks. Additionally, it shall be unlawful to carry, use, or throw away any lighted cigarette, cigar, ashes, or any other flaming or glowing substance except within structures, vehicles, vessels, or posted clear areas.

18.3.3.3 Yuba County Local Hazard Mitigation Plan

The Yuba County Local Hazard Mitigation Plan, updated in 2021, has as its purpose to reduce or eliminate long-term risk to people and property from hazards. Yuba County, its two incorporated cities (Marysville and Wheatland), and nine special districts participated in the preparation of this plan. The plan identifies hazards that threaten communities, assesses their likely impacts, and determines, prioritizes and implements appropriate mitigation strategies. Among the hazards identified were wildfires, which the plan states have a "significant" geographical extent, are considered "likely" to occur in the future, and would have a magnitude/severity that is "critical". Mitigation actions proposed to reduce wildfire risks include fuel reduction and fuels management (Yuba County 2021).

A component of the Yuba County Local Hazard Mitigation Plan is the designation of critical facilities. "Critical facilities" are defined as the physical and cyber systems and assets that are so vital to Yuba County that their incapacity or destruction would have a debilitating impact on physical or economic security or public health or safety. They include any location, facility, or infrastructure that is necessary to maintain normalcy in daily life, and that is essential for the delivery of vital services and for the protection of the community. Critical facilities are further broken out into three categories: 1) Essential Services Facilities, 2) Large Group and Vulnerable Populations Facilities, and 3) Infrastructure Facilities (Yuba County 2021).

The Local Hazard Mitigation Plan lists 21 Yuba Water facilities that are designated critical facilities. These include the New Bullards Bar Dam and facilities, the Log Cabin and Our House Diversion Dams, the Colgate Powerhouse and Tunnel, the Narrows 1 and Narrows 2 Powerhouses, and the recreation facilities, among others. All these critical facilities are considered Essential Services Facilities, and the critical facilities named here are considered at risk from wildfire (Yuba County 2021).

18.3.3.4 Nevada County Local Hazard Mitigation Plan

The Nevada County Local Hazard Mitigation Plan, updated in 2024, has the same purpose as the Yuba County plan - to reduce or eliminate long-term risk to people and property from hazards. Nevada County, its three incorporated communities (Grass Valley, Nevada City, and Truckee), and four special districts participated in the preparation of this plan. Among the hazards identified as likely to occur were wildfires, which the plan indicates has a 100 percent probability of occurring every year. The plan identifies several "mitigation actions" related to wildfires. These include actions that can be applied throughout much or all of the County, such as a biomass program and the Sierra Foothill Forest Climate Resilience Project to improve forest health through targeted hand-thinning and mastication of shrubs and small trees. They also include fuel break, hazardous fuel reduction, and ingress/egress improvement projects in specific areas of the County (Nevada County 2024).

18.3.3.5 Sierra County Local Hazard Mitigation Plan

The Sierra County Local Hazard Mitigation Plan, adopted in 2012, has the same purpose as the other local hazard mitigation plans. Among the hazards identified in the plan as likely to occur were wildfires, which the plan states have a "High" potential impact and are a priority hazard. Mitigation actions to reduce wildfire risks include development of defensible space enforcement and compliance, development of a fuel reduction program, and implementation of a public road clearance and improvement program (Sierra County 2012).

18.3.3.6 Sierra County Community Wildfire Protection Plan

Like the Yuba County Foothills Community Wildfire Protection Plan, the Sierra County Community Wildfire Protection Plan provides a comprehensive, scientifically based assessment of the wildfire hazards and risks in Sierra County. It also provides potential projects to mitigate those hazards within the responsibility areas of the five Sierra County Fire Protection Districts. Proposed actions include fuel breaks and roadside fuel hazard reduction (Sierra County FPD #1 2014).

18.4 Impact Assessment Methodology

The impact analysis for wildfire follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. The geographical scope of the impact analysis on land use is the Project Area. The Future Baseline used in the analysis of flow-related conditions does not apply to this chapter. Changes in flows in the Project Area generally will not have any bearing on emergency evacuations, wildfire spread, infrastructure requirements, wildfire ignitions, and other wildfire-related issues. Therefore, changes in flow-based operations under the Proposed Projects and alternatives are not analyzed further in this chapter, including indirect impacts under Alternative 1.

Impacts on wildfire were identified qualitatively based on the Proposed Projects' potential to increase wildfire occurrence and associated risks, along with emergency responder access and ability for residents to evacuate when wildfire threatens. A desktop analysis was completed to collect and analyze data related to wildfire risks in the Project Area. More specifically, the CalFire

FHSZ maps were used to assess the level of wildfire risk to facilities in the Project Area, which provides the background in determining the significance of potential Proposed Projects activities as they relate to wildfire. The Yuba County General Plan, which covers most of the location of the YRDP and Narrows facilities, depicts evacuation routes relevant to the Project Area, thereby focusing the analysis related to evacuations.

As noted, Chapter 11, Recreation, indicates that YRDP recreation facilities generated 69,838 vehicle-days. A vehicle-day is each visit by a vehicle to a development for recreation purposes during any portion of a 24-hour period. For the purposes of this analysis, it is assumed that each vehicle-day is associated with one vehicle.

In analyzing potential wildfire impacts, references are made to YRDP management plans, including the *Recreation Facilities Plan, Fire Prevention and Response Plan,* and *Transportation System Management Plan.* Where appropriate, these management plans are cited, and contents relevant to wildfire issues are described. Actions described in these management plans are used in determining the significance of the environmental issue being analyzed. Where applicable, federal, state and local plans and regulations described in the Regulatory Setting are referenced in the impact analysis and used in determining the significance of impacts. YRDP construction-related activities for Alternatives 1 and 2 are the same as those described for the Proposed Projects. The Narrows Project would not involve any construction activities. Therefore, construction impacts related to the Narrows Project are not analyzed in this chapter.

18.4.1 Impact Indicators and Significance Criteria

As described in guidance titled "Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act" (California Attorney General 2022), CEQA requires an analysis of "any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected," including by locating development in wildfire risk areas.[1] For wildfire, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, lead agencies are directed to assess whether a project located in or near state responsibility areas or lands classified as very high fire hazard severity zones may have a significant impact on wildfire if it would:

- **Impact WF-1:** Substantially impair an adopted emergency response plan or emergency evacuation plan.
- **Impact WF-2:** Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

[1] CEQA Guidelines, § 15126.2.

- **Impact WF-3:** Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

- **Impact WF-4:** Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

In addition to the four questions above, the Hazards and Hazardous Materials section of the CEQA checklist broadly directs lead agencies to consider whether a project will "*expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires*."[2] In answering these questions, lead agencies must consider both on- and off-site impacts[3] (California Attorney General 2022). This is identified as Impact HAZ-7 in Chapter 17, Hazards and Hazardous Materials, and it is referenced here as a significance threshold for wildfire impacts.

18.5 Environmental Impact Analysis

18.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact WF-PP-1: Construction Impacts on Emergency Response Plans or Emergency Evacuation Plans

As noted, the CalFire FHSZ maps identify the Project Area, along with northeastern Yuba County, as being in a Very High FHSZ and thus at risk for wildfires. Also, as noted, the Yuba County General Plan has identified Marysville Road as a primary evacuation route in the Project Area. Marysville Road is identified as primary access from Dobbins and secondary access from Camptonville to the New Bullards Bar Dam for emergency purposes (YCWA 2023a).

YRDP construction work associated with the Proposed Projects would primarily occur off Marysville Road. Haul trucks and construction equipment would periodically travel along Marysville Road to access specific project sites. These uses of Marysville Road for construction equipment could temporarily slow traffic speeds but would not significantly impede emergency vehicle access or evacuations on Marysville Road.

YRDP construction would not substantially impair an adopted emergency response plan or emergency evacuation plan, and it would not impede emergency vehicle access or evacuations. Therefore, impacts would be **less than significant**, and no CEQA mitigation is required.

[2] CEQA Guidelines, Appendix G, IX(g). This Guidance focuses on these key wildfire-related questions in Sections IX(g) and XX of the checklist, but in conducting environmental review, lead agencies must continue to thoroughly address the other questions identified in Section XX and the checklist more generally (State of California 2022).

[3] CEQA Guidelines, § 15360 [defining the environment to be considered as "*the area in which significant effects would occur either directly or indirectly as a result of the project*"].

YRDP Impact WF-PP-2: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

As described in Chapter 2, Project Description, the O&M of dam and hydropower facilities associated with the YRDP under the Existing Condition involves visits of facilities at least several times weekly by Yuba Water personnel and maintenance activities that include testing gates and valves at the dams and intakes inspections of equipment in the powerhouse and switchyard. These activities would occur off Marysville Road, the primary evacuation routes, so O&M activities would not interfere with emergency vehicle access or evacuations on this road.

Typically, maintenance workers access these facilities using Yuba Water vehicles, which would likely involve the use of Marysville Road. The Yuba Water fleet does not vary substantially from the fleet mix of general traffic on Marysville Road, which ranges from passenger vehicles to haul trucks. It is expected that O&M traffic would not change substantially with implementation of the proposed YRDP hydropower facility projects. As such, Yuba Water vehicles using Marysville Road to access facilities for O&M activities would not obstruct or impede emergency vehicle access or evacuations.

The proposed YRDP projects would include improvements to existing recreation facilities and the construction of new facilities, including two new campgrounds. This would likely increase the number of visitors to the YRDP facilities, which would likely increase the number of vehicles on local roads should an evacuation order be issued for the area due to a wildfire. Based on information used in the air quality analysis for Chapter 15, Air Quality (see Appendix 15C), the average number of vehicles at the recreation facilities per day during the peak season was approximately 586 in 2012, the most recent year for which data are available. No breakdown by weekday and weekend is available. There are currently 106 campground units, 15 picnic sites and 3 boat ramps in the YRDP area. The proposed YRDP would add 55 campground units and 15 picnic sites. Based on an average of approximately 4.73 vehicles per recreation facility, the new facilities would add approximately 331 vehicles per day visiting the recreation facilities during the peak season. Total vehicles per day during the peak season would be 917.

This increase in vehicles may add time to the evacuation of both residents and visitors from the area, which could place evacuees at risk of exposure to an oncoming wildfire. Since the recreation season (approximately April to October) overlaps with the typical wildfire season, this evacuation scenario becomes more probable.

Since most YRDP facilities are or would be accessible via Marysville Road, this road would most likely be used by visitors should an evacuation occur. Depending on the location and anticipated path of the wildfire and its fire spread rate, visitor vehicles on Marysville Road could either go east to State Highway 49 or west to State Highway 20. The direction that vehicles would take on Marysville Road, along with other aspects of an evacuation, would be determined by the Yuba County Office of Emergency Services, in coordination with fire, police, and other relevant agencies.

Annex E of the Yuba County Local Hazard Mitigation Plan specifies the procedures to be implemented for an evacuation. An evacuation can be ordered by the County, the County Administrator or statutorily designated law enforcement officers, or the Governor. The Yuba

County Emergency Operations Center is activated and can recommend a voluntary or mandatory evacuation. The County will notify the general public of an evacuation through the Code Red System and the Emergency Alert System. The Yuba County Sheriff's Department will be responsible for enforcing the evacuation. Roads identified as likely evacuation routes in the Project Area and vicinity include State Highways 20 and 49 and Marysville Road (Yuba County 2019).

Emergency personnel who issue an evacuation order take into account the time needed to implement an evacuation when determining when and where to issue evacuation orders. If an evacuation were needed during a peak recreational season, it would be expected to be ordered to allow sufficient time to implement the evacuation. For events like wildfires, the fires are tracked from the moment of discovery, and risk is assessed on a continual basis. Days of lead time are often available to assess risk and make evacuation determinations. During these periods, recreation camping would likely be limited, if even allowed, due to drifting smoke, awareness of the risk, or other factors that would typically result in people avoiding the area.

Early evacuation is considered the safest action to be taken. However, there could be occasions on which the wildfire starts close by and spreads rapidly to the recreation facilities, thereby making evacuations more difficult. The possibility of a nearby, rapidly-spreading wildfire, while concerning, is not unique to the Proposed Projects; the same risk occurs under the Existing Condition. Changes in operations would not significantly increase the risk of wildfire ignitions at or near the recreation facilities or create conditions that would increase the speed of wildfire spread. Requirements and actions that would reduce the potential for wildfire starting at the recreation facilities are discussed under YRDP Impact WF-PP-4.

However, neither Yuba Water nor Yuba County have established measures to enhance the safety of employees or visitors who are unable to evacuate from a nearby, fast-spreading wildfire. These measures can include "shelter in place" directives and Temporary Refuge Areas. Although the Yuba Foothills Community Wildfire Protection Plan recommends two Yuba Water facilities as Temporary Refuge Areas, no formal designations have been made, nor are there known procedures for activating such areas. Community Wildfire Mitigation Measure MM-WF-1 would require the preparation and implementation of a plan for visitors and employees unable to evacuate from a wildfire area. It is emphasized that this mitigation measure is meant to implement actions that are a last resort and is not intended to substitute for advised or ordered evacuations.

Adequate warning, plus execution of evacuation procedures as described in Annex E, would ensure that evacuations from the YRDP recreation facilities are conducted with minimal disruption and with consideration to residents of the area that have been ordered to evacuate. Mitigation would enhance the safety of visitors and employees who may not be able to evacuate. Therefore, project impacts on emergency response plans or emergency evacuation plans would be **less than significant with mitigation incorporated**.

Mitigation Measure

MM-WF-1. Yuba Water, in coordination with the Yuba County Office of Emergency Services and the Yuba Watershed and Fire Safe Council, shall prepare a plan to be implemented in the event that visitors to Yuba Water recreation facilities and Yuba Water employees and contractors cannot be safely evacuated from a wildfire that spreads to the Project Area and vicinity. This plan may

include, but is not limited to, shelter-in-place procedures and designation of temporary refuge areas, which may include but are not limited to parking lots and outdoor gathering areas. This plan is to be implemented as a last resort and in no way shall be interpreted as to allow Yuba Water visitors, employees, and contractors to ignore evacuation notices, whether advisory or mandatory.

Timing: Plan shall be adopted no later than within one year of license reissuance and prior to opening of any new recreational facilities.

Responsibility: Yuba Water.

YRDP Impact WF-PP-3: Construction Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

The presence of construction workers, vehicles, and equipment could increase the possibility of ignition of a wildfire from construction activities through human influences such as those described in the Environmental Setting. The ignition of wildfires due to construction activities could potentially expose Yuba Water employees, along with nearby residents and communities to air pollutants released during a wildfire. These pollutants include primarily smoke, ash, and other particulate matter, along with ozone-forming pollutants and TACs. Chapter 15, Air Quality, discusses air quality impacts in more detail.

FRAQMD monitors air quality in Yuba County and occasionally issues air quality health advisories to notify the public of potentially poor conditions, due to events such as a wildfire. These advisories allow residents and employers to take actions that would limit their exposure to air pollutants, such as staying indoors or wearing masks.

To reduce the potential for uncontrolled spread of wildfire from construction activities, the YRDP would comply with the provisions of its *Fire Prevention and Response Plan.* The *Fire Prevention and Response Plan* identifies the fire fighting equipment that each vehicle at a job site must carry. Operations staff involved with any type of equipment/tool use within the Project Area will be required to take specific fire prevention actions and measures during the fire precautionary period (May 15 to November 1). These measures, described in Attachment A of the plan, include equipping operating tractors and any other internal combustion engine with a spark arrestor, providing a water tank truck or trailer at the construction site, and no smoking except in specified areas, Also, contractor operations shall conform to the limitations or requirements in the Project Activity Level table, scaled from A to E with E being the most restrictive level. The Forest Service shall determine the Project Activity Level for the day (YCWA 2023a).

Implementation of the *Fire Prevention and Response Plan* would minimize the likelihood YRDP construction would cause a wildfire. Therefore, YRDP construction is unlikely to exacerbate wildfire risk such that it could potentially increase the risk of exposure of nearby residents to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. YRDP construction impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact WF-PP-4: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

The O&M of dam and hydropower facilities associated with the YRDP, as described under YRDP Impact WF-PP-1, takes place at existing facilities. As noted, fire extinguishers are available in buildings, and fire suppression equipment is required at outdoor sites.

As noted above, the YRDP includes improvements to existing recreation facilities and the construction of new facilities, including two new campgrounds. Visitors to these facilities, while relatively small in number, nevertheless increases the risk of the potential for wildfires to start by activities such as escaped campfires and smoking. While this potential cannot be completely eliminated, design features can minimize the occurrence of some causes. As described in the Regulatory Setting, Forest Service Manual 2300 sets forth design guidelines for fire protection, such as installing fire-containing devices for proper fire control, locate fire-containing devices away from flammable features, and constructing and maintaining a firebreak around facilities to reduce potential wildfire impacts.

In addition, as described in the Regulatory Setting, Yuba County Code Section 8.50.080 prohibits open fires within the Bullards Bar Recreation Area except in a camp stove or a fireplace. It also prohibits the discharge of any firecrackers, torpedoes, rockets, or other fireworks, which are potential fire sources. Additionally, it prohibits carrying, using, or throwing away any lighted cigarette, cigar, ashes, or any other flaming or glowing substance except within structures, vehicles, vessels, or posted clear areas.

As noted under Impact WF-PP-3, YRDP would comply with the provisions of its *Fire Prevention and Response Plan,* which identifies the fire fighting equipment that each vehicle at a job site must carry. If emergency repairs necessary for public safety or to prevent damage to facilities require welding or cutting and Yuba Water does not have a permit, Yuba Water will endeavor to follow the "Very High" fire rating restrictions, will have appropriate fire safety equipment available on site, and notify the Forest Service within 8 hours following the emergency. Also, for project operations requiring burning, Yuba Water and its subcontractors will obtain the necessary burn permit from the appropriate CalFire unit(s) and respective air quality management district(s), as appropriate, prior to burning on NFS land, along with prior Forest Service approval (YCWA 2023a).

In summary, YRDP operations would result in the potential for increased risks of wildfire. However, given the small number of potential new visitors and existing regulatory requirements, along with implementation of the *Fire Prevention and Response Plan,* it would not significantly exacerbate wildfire risk such that it could potentially lead to exposure of nearby residents to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, YRDP operational impacts would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact WF-PP-5: Construction Impacts Related to Installation or Maintenance of Associated Infrastructure

As described in Chapter 2, Project Description, temporary facilities and laydown/staging locations are available adjacent to most YRDP projects. The exception is the new recreation facilities, the

construction of which would be subject to procedures described in Chapter 2 and to the provisions of the Forest Service Manuals and Guidebooks described in the Regulatory Setting above. It is not anticipated that construction of these projects would require the installation of infrastructure that would exacerbate wildfire risk, even temporarily.

During construction of facilities, the use of equipment like diesel-powered vehicles, gasoline-powered tools, and other machinery could pose a fire risk due to potential sparks, fire, or flames. Given the location of the proposed construction areas, this could lead to a substantial wildfire. However, personnel on the site would comply with the YRDP *Fire Prevention and Response Plan*, described under YRDP Impact WF-PP-3. To reduce the risk, fire protection procedures such as regular equipment inspection, mechanical maintenance, accessibility to firefighting equipment, proper storage of combustible liquids, no smoking in designated areas, and worker training for firefighting extinguisher use would be implemented. Furthermore, a water truck would be available on-site for fire emergencies, given the recent history of wildfires in the area. In addition, construction activities would be subject to the provisions of the California Public Resources Code sections described in the Regulatory Setting, which contains applicable requirements for fire prevention during construction.

No additional infrastructure or maintenance beyond that prescribed in the *Fire Prevention and Response Plan* would be required. Therefore, YRDP construction impacts related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment would be **less than significant.** No CEQA mitigation would be required.

YRDP Impact WF-PP-6: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

YDRP dam and hydropower facilities are unlikely to cause any wildfires as a result of their operations. Yuba Water reports that no wildfires have resulted from project-related O&M activities (FERC 2019). The proposed changes to operations would not exacerbate wildfire risk beyond that under the Existing Condition.

Improved and additional recreation facilities, described in Chapter 2, Project Description, would accommodate more visitors. This may increase the risk of a wildfire starting at these facilities, due to carelessness or deliberate intent by visitors. As addressed under YRDP Impact WF-PP-4, all recreation facilities would be subject to Yuba County Code Section 8.50.080, which would minimize the fire risk associated with facility visitors. Campgrounds on NFS land are also subject to Forest Service regulations applicable to fire prevention, as described in the Regulatory Setting above.

YRDP would implement the *Integrated Vegetation Management Plan*, which provides guidance for the management of vegetation and hazard reduction activities related to YRDP O&M. The plan calls for routine vegetation management, as part of which Yuba Water will routinely clear vegetation in the immediate vicinity of YRDP structures (e.g., powerhouses), recreation facilities and Primary Project Roads. On NFS land, clearing will be performed by mechanical means (e.g., chainsaws and weed whackers), unless otherwise approved by the Forest Service. Vegetation management along Primary Project and Recreation road edges is accomplished on private land

with the use of herbicides by licensed herbicide applicators, and by mastication on roads located on NFS land, unless the Forest Service explicitly agrees to the use of herbicides. At all YRDP-related recreation sites located on NFS land within the FERC Project Boundary, vegetation management activities include the removal of vegetation, hazardous branches, and hazard trees to facilitate recreation activities (YCWA 2014). These activities would reduce the amount of vegetation that could provide fuel for wildfires. In addition, Yuba Water would implement the *Fire Prevention and Response Plan*, which is described under YRDP Impact WF-PP-3.

No additional infrastructure or maintenance beyond that prescribed in the actions described above would be required. Therefore, YRDP operational impacts related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment would be **less than significant.** No CEQA mitigation would be required.

YRDP Impact WF-PP-7: Construction Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

As discussed under YRDP Impacts WF-PP-3 and WF-PP-5, YRDP construction activities would involve the implementation of the YRDP *Fire Prevention and Response Plan,* which would minimize the risk of wildfire caused by construction activities. Because of this, construction would result in little risk of exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes caused by wildfire. YRDP construction impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact WF-PP-8: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

As discussed under YRDP Impacts WF-PP-4 and WF-PP-6, changes to YDRP dam and hydropower facility operations would not exacerbate wildfire risk beyond that under the Existing Condition . As discussed under YRDP Impacts WF-PP-4 and WF-PP-6, potential wildfires from recreation facilities would be minimized through implementation of management plans and compliance with Yuba County Code Section 8.50.080. Therefore, YRDP operations are unlikely to expose people or structures to significant risks associated with runoff, post-fire slope instability, or drainage changes, including downslope or downstream flooding or landslides. YRDP operational impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact WF-PP-9: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

YRDP development under the Proposed Projects would add structures, including recreational facilities, in a Very High FHSZ. As noted, the Yuba County Local Hazard Mitigation Plan lists 21 Yuba Water facilities in the Project Area that are designated critical facilities. Proposed YRDP construction would add more recreation facilities that would be exposed to potential wildfires and which have been designated critical facilities. As noted, existing and new recreation facilities would accommodate an increase in visitors, who would be exposed to wildfire risk. As discussed under YRDP Impact WF-PP-2, evacuation procedures have been established by the County and

would be implemented should an evacuation be ordered. For people unable to evacuate timely, Mitigation Measure MM-WF-2 would enhance their safety.

The YRDP dam and hydropower projects may lead to an incremental increase in the number of employees required to conduct O&M on the new or expanded facilities. These employees appear at these facilities either as needed or as part of a regular schedule of inspection and maintenance. The wildfire risk to which any additional employees would be exposed would be the same as that current employees are exposed to under the Existing Condition. As noted, employees can be evacuated should wildfire threaten these facilities, and Mitigation Measure MM-WF-1 would address their safety if they cannot be evacuated.

In summary, the proposed YRDP development would lead to an increased exposure of people and structures to wildfire risk. However, plans, ordinances, and projects that would be implemented, along with Mitigation Measure MM-WF-1, would reduce the risk of loss, injury, or death. Therefore, impacts are considered **less than significant with mitigation incorporated**.

Narrows Impact WF-PP-1: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

As has been noted, the Narrows Project has no recreation facilities, so no visitors would require emergency vehicles to access the area nor would require evacuation. Yuba Water employees working at the Narrows Project facilities would not be under any increased risk related to evacuation than under the Existing Condition. Therefore, Narrows Project operational impacts on emergency response plans or emergency evacuation plans would be **less than significant**. No CEQA mitigation is required.

Narrows Impact WF-PP-2: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

As discussed under Narrows Impact WF-PP-1, the Narrows Project would be occupied by employees performing O&M. Their occupation would not be prolonged at any given time, and they could be evacuated if necessary. As noted under YRDP Impact WP-PP-6, Yuba Water reports that no wildfires have resulted from project-related O&M activities. Therefore, Narrows Project operations would not exacerbate wildfire risk such that it could potentially lead to exposure of residents in the Lower Yuba River to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact WF-PP-3: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

As noted under YRDP Impact WP-PP-6, Yuba Water reports that no wildfires have resulted from project-related O&M activities. In addition, there are no recreation facilities in the Narrows Project area, and none are proposed. Therefore, Narrows Project operations would not result in the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact WF-PP-4: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

As noted under YRDP Impact WF-PP-6, Yuba Water reports that no wildfires have resulted from project-related O&M activities. In addition, there are no recreation facilities in the Narrows Project area, and none are proposed, so there would be no wildfire risks from recreation facilities. Therefore, Narrows Project operations would not expose people or structures to significant risks associated with runoff, post-fire slope instability, or drainage changes, including downslope or downstream flooding or landslides. Impacts would be **less than significant**, and no CEQA mitigation is required.

Narrows Impact WF-PP-5: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

As noted in Chapter 2, Project Description, Yuba Water does not propose any changes to existing Narrows Project works or facilities. As such, there would be no change to the existing exposure of people to risk of loss, injury, or death involving wildland fires. As discussed under Narrows Impact WF-PP-1, it is expected that emergency access would be maintained and evacuations could be conducted if necessary.

Narrows Project facilities have been designated critical facilities in the Yuba County Local Hazard Mitigation Plan. However, no new facilities would be constructed in the Narrows Project area, and operations would not vary from the Existing Condition. As such, no additional visitors or employees would be placed in an area of wildfire risk.

In summary, the Narrows Project would not lead to an increased exposure of people to wildfire risk, and no new structures would be exposed to wildfire risk. Therefore, impacts are considered **less than significant**, and no CEQA mitigation would be required.

18.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact WF-Alt1-1: Construction Impacts on Emergency Response Plans or Emergency Evacuation Plans

Alternative 1 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained for YRDP Impact WF-PP-1, YRDP construction work associated with Alternative 1 would not significantly impede emergency vehicle access or evacuations on Marysville Road. Therefore, YRDP construction impacts under Alternative 1 would be **less than significant.**

YRDP Impact WF-Alt1-2: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

Alternative 1 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 1 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-2, with the implementation of Mitigation Measure MM-WF-1, Alternative 1 YRDP operational

impacts on emergency response plans or emergency evacuation plans are considered **less than significant with mitigation incorporated**.

YRDP Impact WF-Alt1-3: Construction Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Alternative 1 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained for YRDP Impact WF-PP-3), YRDP construction under Alternative 1 is unlikely to exacerbate wildfire risk such that it could potentially lead to exposure of nearby residents to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. YRDP construction impacts under Alternative 1 would be **less than significant.**

YRDP Impact WF-Alt1-4: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Alternative 1 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 1 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-4, YRDP operations under Alternative 1 would not exacerbate wildfire risk such that it could potentially lead to exposure of nearby residents to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. YRDP operational impacts under Alternative 1 would be **less than significant**.

YRDP Impact WF-Alt1-5: Construction Impacts Related to Installation or Maintenance of Associated Infrastructure

Alternative 1 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained for YRDP Impact WF-PP-5, YRDP construction impacts under Alternative 1 related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment would be **less than significant.**

YRDP Impact WF-Alt1-6: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

Alternative 1 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 1 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-6, YRDP operational impacts under Alternative 1 related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment would be **less than significant.**

YRDP Impact WF-Alt1-7: Construction Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

Alternative 1 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the reasons explained for

YRDP Impact WF-PP-7, YRDP construction activities under Alternative 1 would result in little risk of exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes caused by wildfire. YRDP construction impacts under Alternative 1 would be **less than significant**.

YRDP Impact WF-Alt1-8: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes

Alternative 1 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 1 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-8, YRDP operations under Alternative 1 are unlikely to expose people or structures to significant risks associated with runoff, post-fire slope instability, or drainage changes, including downslope or downstream flooding or landslides. YRDP operational impacts under Alternative 1 would be **less than significant**.

YRDP Impact WF-Alt1-9: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

Alternative 1 YRDP impacts would be the same as those under the Proposed Projects scenario because Alternative 1 includes the same YRDP construction activities and non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-9, with the implementation of Mitigation Measure MM-WF-1, Alternative 1 YRDP impacts are considered **less than significant with mitigation incorporated**.

Narrows Impact WF-Alt1-1: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

Alternative 1 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because Narrows Project operations would be the same under Alternative 1 and the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-1, Narrows Project operational impacts on emergency response plans or emergency evacuation plans under Alternative 1 would be **less than significant.**

Narrows Impact WF-Alt1-2: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Alternative 1 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because Narrows Project operations would be the same under Alternative 1 and the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-2, Narrows Project operations under Alternative 1 would not exacerbate wildfire risk such that it could potentially lead to exposure of residents in the Lower Yuba River to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Impacts would be **less than significant.**

Narrows Impact WF-Alt1-3: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

Alternative 1 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because Narrows Project operations would be the same under Alternative 1 and the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-3, Narrows Project operations under Alternative 1 would not result in the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Impacts would be **less than significant.**

Narrows Impact WF-Alt1-4: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

Alternative 1 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because Narrows Project operations would be the same under Alternative 1 and the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-4, Narrows Project operations under Alternative 1 would not expose people or structures to significant risks associated with runoff, post-fire slope instability, or drainage changes, including downslope or downstream flooding or landslides. Impacts would be **less than significant.**

Narrows Impact WF-Alt1-5: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

Alternative 1 Narrows Project impacts would be the same as those under the Proposed Projects scenario because Narrows Project operations would be the same under Alternative 1 and the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-5, Narrows Project operations under Alternative 1 would not lead to an increased exposure of people or structures to wildfire risk. Therefore, impacts are considered **less than significant**.

18.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact WF-Alt2-1: Construction Impacts on Emergency Response Plans or Emergency Evacuation Plans

Alternative 2 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained for YRDP Impact WF-PP-1, YRDP construction work associated with Alternative 2 would not significantly impede emergency vehicle access or evacuations on Marysville Road. Therefore, YRDP construction impacts under Alternative 2 would be **less than significant.**

YRDP Impact WF-Alt2-2: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

Alternative 2 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 2 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-2, with the implementation of Mitigation Measure MM-WF-1, Alternative 2 YRDP operational

impacts on emergency response plans or emergency evacuation plans are considered **less than significant with mitigation incorporated**.

YRDP Impact WF-Alt2-3: Construction Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Alternative 2 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained for YRDP Impact WF-PP-3, YRDP construction under Alternative 2 is unlikely to exacerbate wildfire risk such that it could potentially lead to exposure of nearby residents to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. YRDP construction impacts under Alternative 2 would be **less than significant.**

YRDP Impact WF-Alt2-4: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Alternative 2 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 2 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-4, YRDP operations under Alternative 2 would not exacerbate wildfire risk such that it could potentially lead to exposure of nearby residents to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. YRDP operational impacts under Alternative 2 would be **less than significant**.

YRDP Impact WF-Alt2-5: Construction Impacts Related to Installation or Maintenance of Associated Infrastructure

Alternative 2 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained for YRDP Impact WF-PP-5, YRDP construction impacts under Alternative 2 related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment would be **less than significant.**

YRDP Impact WF-Alt2-6: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

Alternative 2 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 2 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-6, YRDP operational impacts under Alternative 2 related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment would be **less than significant.**

YRDP Impact WF-Alt2-7: Construction Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

Alternative 2 YRDP construction activities would be the same as those under the Proposed Projects scenario and therefore would have the same associated impacts. For the same reasons explained

for YRDP Impact WF-PP-7, YRDP construction activities under Alternative 2 would result in little risk of exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes caused by wildfire. YRDP construction impacts under Alternative 2 would be **less than significant**.

YRDP Impact WF-Alt2-8: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes

Alternative 2 YRDP operational impacts would be the same as those under the Proposed Projects scenario because Alternative 2 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-8, YRDP operations under Alternative 2 are unlikely to expose people or structures to significant risks associated with runoff, post-fire slope instability, or drainage changes, including downslope or downstream flooding or landslides. YRDP operational impacts under Alternative 2 would be **less than significant**.

YRDP Impact WF-Alt2-9: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

Alternative 2 YRDP impacts would be the same as those under the Proposed Projects scenario because Alternative 2 includes the same YRDP construction activities and non-flow YRDP operations and maintenance activities as the Proposed Projects. For the same reasons explained for YRDP Impact WF-PP-9, with the implementation of Mitigation Measure MM-WF-1, Alternative 2 YRDP impacts are considered **less than significant with mitigation incorporated**.

Narrows Impact WF-Alt2-1: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

Alternative 2 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because non-flow Narrows operations under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-1, Narrows Project operational impacts on emergency response plans or emergency evacuation plans under Alternative 2 would be **less than significant.**

Narrows Impact WF-Alt2-2: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Alternative 2 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because non-flow Narrows operations under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-2, Narrows Project operations under Alternative 2 would not exacerbate wildfire risk such that it could potentially lead to exposure of residents in the Lower Yuba River to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Impacts would be **less than significant.**

Narrows Impact WF-Alt2-3: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

Alternative 2 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because non-flow Narrows operations under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-3, Narrows Project operations under Alternative 2 would not result in the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Impacts would be **less than significant.**

Narrows Impact WF-Alt2-4: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes

Alternative 2 Narrows Project operational impacts would be the same as those under the Proposed Projects scenario because non-flow Narrows operations under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-4, Narrows Project operations under Alternative 2 would not expose people or structures to significant risks associated with runoff, post-fire slope instability, or drainage changes, including downslope or downstream flooding or landslides. Impacts would be **less than significant.**

Narrows Impact WF-Alt2-5: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

Alternative 2 Narrows Project impacts would be the same as those under the Proposed Projects scenario because non-flow Narrows operations under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained for Narrows Impact WF-PP-5, Narrows Project operations under Alternative 2 would not lead to an increased exposure of people or structures to wildfire risk. Therefore, impacts are considered **less than significant**.

18.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact WF-NP-1: Construction Impacts on Emergency Response Plans or Emergency Evacuation Plans

No construction work would occur under the No Project Alternative. As such, there would be **no impact** on emergency response plans or emergency evacuation plans from YRDP construction activities under the No Project Alternative.

YRDP Impact WF-NP-2: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

Except for hydropower generation, existing YRDP operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on emergency response plans or emergency evacuation plans from YRDP operations under the No Project Alternative.

YRDP Impact WF-NP-3: Construction Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

No construction work would occur under the No Project Alternative. As such, there would be **no impact** on exposure of project occupants to pollutant concentrations or uncontrolled spread of wildfire from YRDP construction activities under the No Project Alternative.

YRDP Impact WF-NP-4: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Except for hydropower generation, existing YRDP operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on exposure of project occupants to pollutant concentrations or uncontrolled spread of wildfire from YRDP operations under the No Project Alternative.

YRDP Impact WF-NP-5: Construction Impacts Related to Installation or Maintenance of Associated Infrastructure

No construction work would occur under the No Project Alternative. As such, there would be **no impact** related to installation or maintenance of associated infrastructure from YRDP construction activities under the No Project Alternative.

YRDP Impact WF-NP-6: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

Except for hydropower generation, existing YRDP operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. No new infrastructure would be installed, including recreation facilities that could increase wildfire potential. Therefore, there would be **no impact** related to installation or maintenance of associated infrastructure from YRDP operations under the No Project Alternative.

YRDP Impact WF-NP-7: Construction Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

No construction work would occur under the No Project Alternative. As such, there would be **no impact** on exposure of people or structures to significant risks resulting from runoff, post-fire slope instability, or drainage changes from YRDP construction activities under the No Project Alternative.

YRDP Impact WF-NP-8: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

Except for hydropower generation, existing YRDP operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on exposure of people or structures to significant risks resulting from runoff, post-fire slope instability, or drainage changes from YRDP operations under the No Project Alternative.

YRDP Impact WF-NP-9: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

No construction work would occur under the No Project Alternative. Except for hydropower generation, existing YRDP operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on exposure of people or structures to a significant risk of loss, injury or death involving wildland fires associated with the YRDP under the No Project Alternative.

Narrows Impact WF-NP-1: Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans

Except for hydropower generation, existing Narrows Project operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on emergency response plans or emergency evacuation plans from Narrows Project operations under the No Project Alternative.

Narrows Impact WF-NP-2: Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire

Except for hydropower generation, existing Narrows Project operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on exposure of project occupants to pollutant concentrations or uncontrolled spread of wildfire from Narrows Project operations under the No Project Alternative.

Narrows Impact WF-NP-3: Operational Impacts Related to Installation or Maintenance of Associated Infrastructure

Except for hydropower generation, existing Narrows Project operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** related to installation or maintenance of associated infrastructure from Narrows Project operations under the No Project Alternative.

Narrows Impact WF-NP-4: Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes.

Except for hydropower generation, existing Narrows Project operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the Existing Condition. As such, there would be **no impact** on exposure of people or structures to significant risks resulting from runoff, post-fire slope instability, or drainage changes from Narrows Project operations under the No Project Alternative.

Narrows Impact WF-PP-5: Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires.

Except for hydropower generation, existing Narrows Project operations would continue under the No Project Alternative and would not materially change wildfire risk when compared to the

Existing Condition. As such, there would be **no impact** on exposure of people or structures to a significant risk of loss, injury or death involving wildland fires from Narrows Project operations under the No Project Alternative.

18.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)).

The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the quantitative assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

18.6.1 Cumulative Condition

The geographical scope of cumulative impact analysis for wildfire can range across a broad area, depending on the susceptibility of the land to wildfire. As shown in Figure 18.2-1, most of the land in and surrounding the Project Area is designated within a Very High Fire Hazard Severity Zone. Projects developed in this zone have the potential to increase wildfire risk. However, as explained below, some projects may reduce wildfire risks. For the purposes of this analysis, the geographical scope would be the Project Area and the projects determined to have potential cumulative impacts, as described below. This would cover the foothill region of Yuba County, plus the portions of Nevada and Sierra Counties where YRDP and Narrows Project facilities are located.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in increased risk of wildfire in the geographical scope area and therefore would not contribute cumulative impacts to wildfire. These include the water transfer and acquisition programs, the water storage and conveyance projects, and the flood control projects.

Only a limited number of projects are considered to have the potential to cumulatively impact wildfire and are specifically considered qualitatively in the cumulative impacts analysis. These include the following:

FERC Hydropower Projects in the Yuba River Watershed

- *Yuba-Bear Hydroelectric Project*
- *Upper Drum-Spaulding Hydroelectric Project*
- *Lower Drum Hydroelectric Project*

Water Storage and Conveyance Projects

- *ARC Spillway Project*

Ecosystem Restoration Projects

- *North Yuba Forest Partnership*
- *Yuba Foothills Healthy Forest Project*
- *Upper Yuba Headwaters Forest Restoration Project*
- *'Inimim Forest Restoration Project*
- *Yuba Roadside Fuel Treatment Project*

Fisheries Improvement Projects

- *Hallwood Side Channel and Floodplain Restoration Project*
- *Timbuctoo Acquisition and Restoration Project*
- *Upper Long Bar Habitat Restoration Project*
- *Lower Long Bar Restoration Project*

Other Local Projects in the Yuba Region

- *Camptonville Biomass Plant*

These projects are described in Chapter 4, and their impacts related to wildfire are addressed below.

18.6.2 Cumulative Condition with Proposed Projects compared to the Existing Condition

18.6.2.1 YB/DS Relicensing Projects

The FERC hydropower projects listed above are in the area upstream of Englebright Dam. Like the Proposed Projects, the FERC hydropower projects would involve relicensing of hydropower facilities. NID is applying for relicensing of the Yuba-Bear Project, while PG&E is applying for relicensing of the Drum-Spaulding projects. The Yuba-Bear relicensing would involve some changes in operations that would affect minimum streamflows, spills from project canals and conduits, and the rate of flow fluctuations following spill events. It also would involve the construction of new facilities such as a new powerhouse and new or rehabilitated recreation facilities. The Drum-Spaulding relicensing would involve the same changes in operations as the Yuba-Bear relicensing, with additional changes specific to Spaulding Dam, Lake Valley Dam, and Drum Canal. This relicensing would also involve new or rehabilitated recreation facilities, as well as the retirement of one powerhouse and the removal of a diversion and associated conveyance system (FERC 2014).

The YB/DS project proposes new or improved hydropower facilities, which by themselves are not expected to generate additional wildfire risk. However, this project also proposes new and rehabilitated recreation facilities as does the proposed YRDP improvements. The YB/DS facilities would likely have impacts similar to those described in YRDP Impact WF-PP-2 - these facilities would likely increase the number of visitors, which could increase the potential risk of fire started

by these visitors, either through accident, negligence, or intent. However, the recreation facilities would likely be the only component of the YB/DS projects that would potentially contribute to an increase in wildfire risk, due to the potential increase in visitors from new facilities. In addition, the YB/DS projects would implement a Fire Prevention and Response Plan on federal project lands to provide fire prevention procedures, reporting, and safe fire practices for PG&E and NID personnel and contractors responsible for operating and maintaining the projects (FERC 2014).

18.6.2.2 ARC Spillway/Camptonville Biomass Plant Projects

The ARC Spillway Project proposes the construction of a second spillway at New Bullards Bar Dam, along with supporting infrastructure to enable spillway operations. The project also proposes the relocation of a segment of Marysville Road and the relocation of the Overlook Site. The environmental impacts of the ARC Spillway Project were analyzed in a 2023 EIR (YCWA 2023b). Potentially significant impacts were identified with ARC Spillway Project construction activities. The utility of Marysville Road for emergency access and as an evacuation route would be maintained the same as the existing roadway, except for a 60-day period during which a one-way flagging operation stationed upstream and downstream of the construction area would be in place along the temporary detour in place during the final stages of constructing the permanent Marysville Road relocation. In addition, temporary traffic delays from Marysville Road closure during blasting and use of heavy construction equipment would occur. The ARC Spillway EIR identified a mitigation measure – the preparation and implementation of a Traffic Safety Plan – that would reduce impacts to a less-than-significant level (YCWA 2023b).

Another potentially significant impact is wildfire ignition from ARC Spillway construction activities that could expose nearby residents and construction workers to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. ARC Spillway construction would not occur at the same time as YRDP construction activities; as such, ARC Spillway construction would not add to the risk of wildfire presented by YRDP construction activities. Mitigation described in the ARC Spillway EIR would require Yuba Water to develop and implement a SWPPP with BMPs for wildland fire prevention, as part of its Construction General Permit. In addition, another mitigation measure would require Yuba Water to prepare and implement a Fire Safety Plan during project construction. Implementation of these mitigation measures would reduce potential impacts to a level that would be less than significant (YCWA 2023b).

The Camptonville Biomass Plant is the only proposed structure not related to the New Bullards Bar Dam that may be subject to wildfire hazards. However, adherence to the California Fire Code and the applicable sections of the California Public Resources Code, as described in the Regulatory Setting, would reduce the potential wildfire risk to which this project would be subject, as well as the potential wildfire hazard the project may create. In addition, the proposed plant would be located on a former sawmill site, an already developed area.

18.6.2.3 Forest Thinning/Ecosystem Restoration Projects

All the forest restoration projects listed above are in the area upstream of Englebright Dam. The purpose of these projects is to reduce wildfire risk by removing vegetation through prescribed burning, mechanical/manual treatment, and creation of firebreaks among other methods.

The North Yuba Forest Partnership involves Yuba Water and various public and non-profit organizations. They collaboratively plan, analyze, finance, and implement forest restoration on NFS lands across the entire 275,000-acre Yuba River watershed that includes portions of Yuba and Sierra Counties. Through ecologically-based thinning and controlled burning, the partnership seeks to reduce the threat of catastrophic wildfire to North Yuba communities and restore the watershed to a healthier and more resilient state (Yuba County 2021). Projects related to the North Yuba Forest Partnership that have begun or are approved include the Yuba Project, which treats 14,545 acres of National Forest land in Sierra County, and the Yuba II Project, which will treat 48,000 acres of public and private forestland in Yuba and Sierra Counties.

The Yuba Foothills Healthy Forest Project treats 5,375 acres adjacent to communities in the Yuba County foothills. The Upper Yuba Headwaters Forest Restoration Project addresses fire risk on 400 acres near Jackson Meadows Reservoir in Nevada County. The ‘Inimim Forest Restoration Project, a three-phase project of which two have been completed, proposes to restore approximately 1,100 acres of forest to old-growth conditions, involving hand-thinning and prescribed burning.

The Yuba Roadside Fuel Treatment Project, which began in 2023, serves to reduce fire fuels, and thus fire risks, along 555 miles of County roads and private roads. The project would create shaded fuel breaks within a 150-foot buffer on both sides of County roads and a 30-foot buffer on each side of County Service Area and private roads. The updated Community Wildfire Protection Plan identified the roads in the Yuba Foothills area where treatment has been designated a “very high” priority (Yuba Fire Safe Council 2025). Along with Marysville Road near New Bullards Bar Reservoir, “very high” priority roads include SR 49, Moonshine Road east of Marysville Road, and Baker Road and Garden Valley Road north of New Bullards Bar Reservoir.

The projects listed in Table 4.9-1 do not include any forest thinning projects in the Lower Yuba River. Projects that may have an effect on vegetation, and thus potential fuel for wildfires, include all the fisheries improvements projects listed above, which include proposed restoration of riparian vegetation. SR 20 is the only main evacuation route in this area, and none of the fisheries improvement projects are located such that equipment would be placed along SR 20. Projects in the lower Yuba River that may have an effect on vegetation, and thus potential fuel for wildfires, include all the fisheries improvements projects listed above. These projects include proposed restoration of riparian vegetation, which would increase the potential amount of fuel. However, the riparian vegetation is or would be planted along the banks of the Yuba River, where water would be available for this vegetation, thereby reducing its susceptibility to ignition. Given this and the limited area of the riparian vegetation, the wildfire risk is not expected to substantially increase with the projects that propose the restoration of riparian vegetation. No other Lower Yuba River projects listed in Table 4.9-1 propose any changes to vegetation, and none propose changes to land uses that would attract more people to the area.

Most of the forest thinning projects would occur away from public roads that would likely be used by emergency vehicles and would likely be used as evacuation routes. The Yuba Roadside Fuel Treatment Project is the exception, as equipment may be parked alongside the road during project activities. This could be a potential concern along the main evacuation routes such as Marysville Road and SR 49, which have been designated “very high” priority roads for treatment. However, should an evacuation notice be issued by the County or State, it is expected that any equipment

along these routes would be moved off the road, with enforcement conducted by the Yuba County Sheriff's Department.

All the ecosystem restoration projects discussed above have the potential to affect future wildfire conditions. For most of these projects, the impacts would be beneficial – the thinning and removal of vegetation would reduce the potential intensity and spread of wildfires. The forest thinning projects, in particular, would reduce wildfire risk, thereby potentially reducing the need for evacuations or making evacuations more orderly. The forest thinning and ecosystem restoration projects, in reducing wildfire risks, would also reduce exposure of people to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire, as well as reduce exposure of people or structures to significant risks, as a result of runoff, post-fire slope instability, or drainage changes. Also, none of these projects require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

18.6.2.4 Proposed Projects

As discussed above, the Proposed Projects would not have any unmitigated significant wildfire impacts. However, the Proposed Projects, in combination with other cumulative projects – in particular, the YB/DS recreation facilities and ARC Spillway Project construction – would contribute to a potentially significant increase in wildfire risk under the Cumulative Condition. Therefore, under the Cumulative Condition with the Proposed Projects, there would be a potentially significant cumulative impact associated with wildfire.

YRDP Cumulative Impact WF-PP-1: Potential for significant cumulative wildfire impacts resulting from the YRDP.

As discussed, under the Cumulative Condition, including the Proposed Projects, there would be a potentially significant cumulative wildfire impact relative to the Existing Condition. As explained above, however, the Proposed YRDP Project would not have any unmitigated significant impacts and would implement the *Fire Prevention and Response Plan* and observe Forest Service standards. These would minimize the likelihood of fires occurring as a result of Proposed YRDP construction activities and operations and would ensure that the Proposed YRDP Project would not have a cumulatively considerable incremental contribution to the potentially significant cumulative impact. Thus, the Proposed YRDP Project would result in a **less than significant cumulative impact** on wildfire.

Narrows Cumulative Impact WF-PP-1: Potential for significant cumulative wildfire impacts resulting from the Narrows Project.

As discussed, under the Cumulative Condition, including the Proposed Projects, there would be a potentially significant cumulative wildfire impact relative to the Existing Condition. As explained above, however, the Proposed Narrows Project would not have any significant wildfire impacts because operations under the Proposed Narrows Project would not significantly differ from those that are already occurring under the Existing Condition. Accordingly, the Proposed Narrows Project's incremental contribution to the cumulative wildfire impact would not be cumulatively

considerable, and the Proposed Narrows Project would result in a **less than significant cumulative impact** on wildfire.

18.6.3 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on wildfire are noted in Section 18.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 18.6.2 above. Alternative 1 would include all of same construction and non-flow O&M activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include some differences in flow-based operations, those differences would not affect the potential wildfire impacts and would not alter the analysis and conclusions in Section 18.6.2. For the same reasons explained in Section 18.6.2 above, under the Cumulative Condition, including Alternative 1, the cumulative wildfire impacts would be potentially significant.

YRDP Cumulative Impact WF-Alt1-1: Potential for significant cumulative wildfire impacts resulting from the YRDP.

As discussed, under the Cumulative Condition, including Alternative 1, there would be a potentially significant cumulative wildfire impact relative to the Existing Condition. As explained above, however, YRDP activities under Alternative 1 would not have any unmitigated significant impacts and would implement the *Fire Prevention and Response Plan* and observe Forest Service standards. These would minimize the likelihood of fires occurring as a result of YRDP construction activities and operations under Alternative 1 and would ensure that the YRDP activities under Alternative 1 would not have a cumulatively considerable incremental contribution to the potentially significant cumulative impact. Thus, YRDP activities under Alternative 1 would result in a **less than significant cumulative impact** on wildfire.

Narrows Cumulative Impact WF-Alt1-1: Potential for significant cumulative wildfire impacts resulting from the Narrows Project.

As discussed, under the Cumulative Condition, including Alternative 1, there would be a potentially significant cumulative wildfire impact relative to the Existing Condition. As explained above, however, the Narrows Project operations under Alternative 1 would not have any significant wildfire impacts because Alternative 1 Narrows Project operations would not significantly differ from those that are already occurring under the Existing Condition. Accordingly, Alternative 1 Narrows Project operations would not have a cumulatively considerable incremental contribution to the cumulative wildfire impact, and Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** on wildfire.

18.6.4 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on wildfire are noted in Section 18.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 18.6.2 above. Alternative 2 would include all of same construction and non-flow O&M activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include some differences in flow-based operations, those differences would not affect the potential wildfire impacts and would not alter the analysis and conclusions in Section 18.6.2. For the same reasons explained in Section 18.6.2 above, under the Cumulative Condition, including Alternative 2, the cumulative wildfire impacts would be potentially significant.

YRDP Cumulative Impact WF-Alt2-1: Potential for significant cumulative wildfire impacts resulting from the YRDP.

As discussed, under the Cumulative Condition, including Alternative 2, there would be a potentially significant cumulative wildfire impact relative to the Existing Condition. As explained above, however, YRDP activities under Alternative 2 would not have any unmitigated significant impacts and would implement the *Fire Prevention and Response Plan* and observe Forest Service standards. These would minimize the likelihood of fires occurring as a result of YRDP construction activities and operations under Alternative 2 and would ensure that the YRDP activities under Alternative 2 would not have a cumulatively considerable incremental contribution to the potentially significant cumulative impact. Thus, YRDP activities under Alternative 2 would result in a **less than significant cumulative impact** on wildfire.

Narrows Cumulative Impact WF-Alt2-1: Potential for significant cumulative wildfire impacts resulting from the Narrows Project.

As discussed, under the Cumulative Condition, including Alternative 2, there would be a potentially significant cumulative wildfire impact relative to the Existing Condition. As explained above, however, the Narrows Project operations under Alternative 2 would not have any significant wildfire impacts because Alternative 2 Narrows Project non-flow operations would not significantly differ from those that are already occurring under the Existing Condition. Accordingly, Alternative 2 Narrows Project operations would not have a cumulatively considerable incremental contribution to the cumulative wildfire impact, and Narrows Project operations under Alternative 2 would result in a **less than significant cumulative impact** on wildfire.

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CHAPTER 19

TRANSPORTATION

19.1 Introduction

This chapter describes the environmental setting and regulatory framework for transportation in the Project Area and vicinity and identifies the direct, indirect, and cumulative impacts of the Proposed Projects and alternatives. The transportation analysis focuses on the Project Area that may be affected as a result of the YRDP Relicensing Project's construction and O&M, as well as the Narrows Relicensing Project's O&M activities. For the purposes of this EIR, the geographical scope for transportation analysis is the Project Area and vicinity, the latter including northeastern Yuba County, western Nevada County, and southwestern Sierra County.

19.2 Environmental Setting

19.2.1 Roads and Highways

The Proposed Projects are primarily located in northeastern Yuba County, along with a portion of southwestern Sierra County and western Nevada County. This is an area that is served by a mix of public and private roads. Private roads primarily serve local residences and businesses and are not maintained by a public entity, such as a County.

19.2.1.1 Yuba County

As of 2020, the Yuba County Maintained Road System consists of 654.64 miles of roads, along with 76 bridges greater than 20 feet in length, plus thousands of culverts and drainage structures. All of the roads within the County are classified under the Federal Functional Classification System (Figure 19.2-1). The functional classification of rural major collector, urban collector, or higher is eligible for federal aid funds. Of the County's 654.6 miles of roads, only approximately 172 miles meet these qualifications. The remaining 482.6 miles are urban or rural local roads, which do not qualify for federal or state aid funds (Yuba County Department of Public Works 2020).

Within the Maintained Road System are approximately 119 miles of key roadways that constitute the County's Primary Road Network (Figure 19.2-2). The County chose these primary roads based on their importance of interconnecting the County with other counties and cities, Beale Air Force Base, communities within the County, and having a functional classification that qualifies for federal aid funds. The remaining 535 miles of County roads either have a lower functional classification on the federal aid system or are roads that the County has placed less importance on than the primary network. Of these remaining 535 miles of roads, approximately 102 miles have a gravel surface (Yuba County Department of Public Works 2020). All other roads, including roads in the Primary Road Network, are paved.

The following roads in the County's Primary Road Network provide access to the Project Area and vicinity:

- State Route (SR) 20 is a regional east-west facility linking the coastal area in the west to the Sierra Nevada in the east. In the Project Area and vicinity, SR 20 provides one travel lane in each direction. In 2022, Caltrans reported that average annual daily traffic on SR 20 at the Yuba/Nevada County line was approximately 8,800 (Caltrans 2022).
- SR 49 serves regional north-south traffic in the northeastern area of Yuba County. Within Yuba County, SR 49 is a two-lane conventional highway through rolling and mountainous terrain, servicing the Camptonville and Log Cabin communities, as well as communities in adjacent Nevada County. In 2022, Caltrans reported that average annual daily traffic on SR 49 near Camptonville Road was approximately 1,250 vehicles (Caltrans 2022).
- Marysville Road is a major route through the Projects Are. It is classified by the Yuba County General Plan as a Rural Arterial. An arterial is a road that accommodates longer-distance travel but also provides access to adjacent residential, commercial, and industrial properties. A Rural Arterial has a smaller road width and is designed for a slightly higher speed than an Urban Arterial (Yuba County 2011a). Marysville Road is the sole road providing access across the New Bullards Bar Dam in the north and south directions. Marysville Road intersects the Project Area at the dam and continues northeast for approximately 5.5 miles until it comes to an end at SR 49. From its intersection at the dam, Marysville Road continues southwest for approximately 25 miles before intersecting with SR 20. In 2019, the portion of Marysville Road west of SR 49 experienced 720 average daily trips (SACOG 2019a).

Other public roads provide access to YRDP and Narrows project facilities in Yuba County. These include the following:

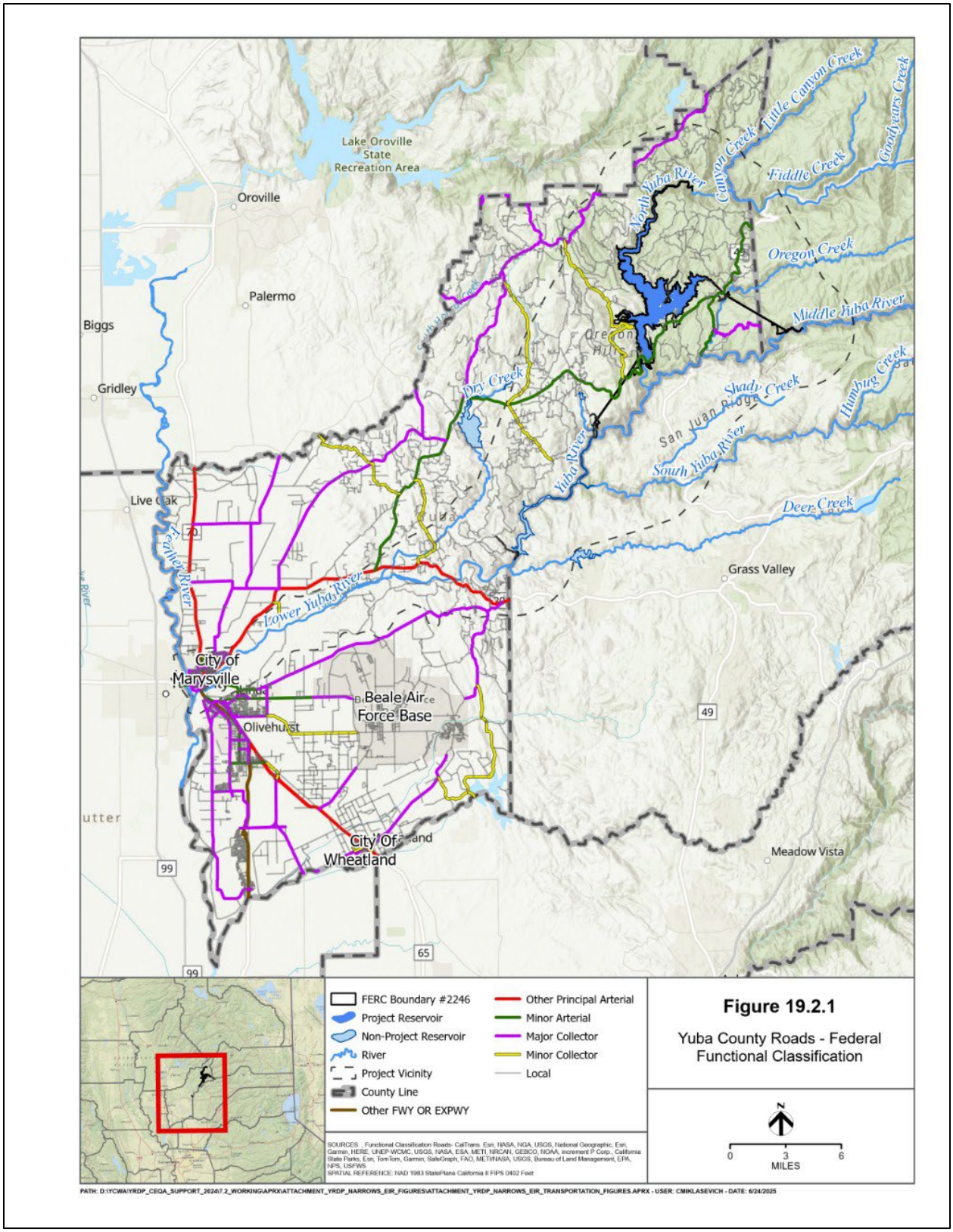

Figure 19.2-1. Yuba County Roads – Federal Functional Classification

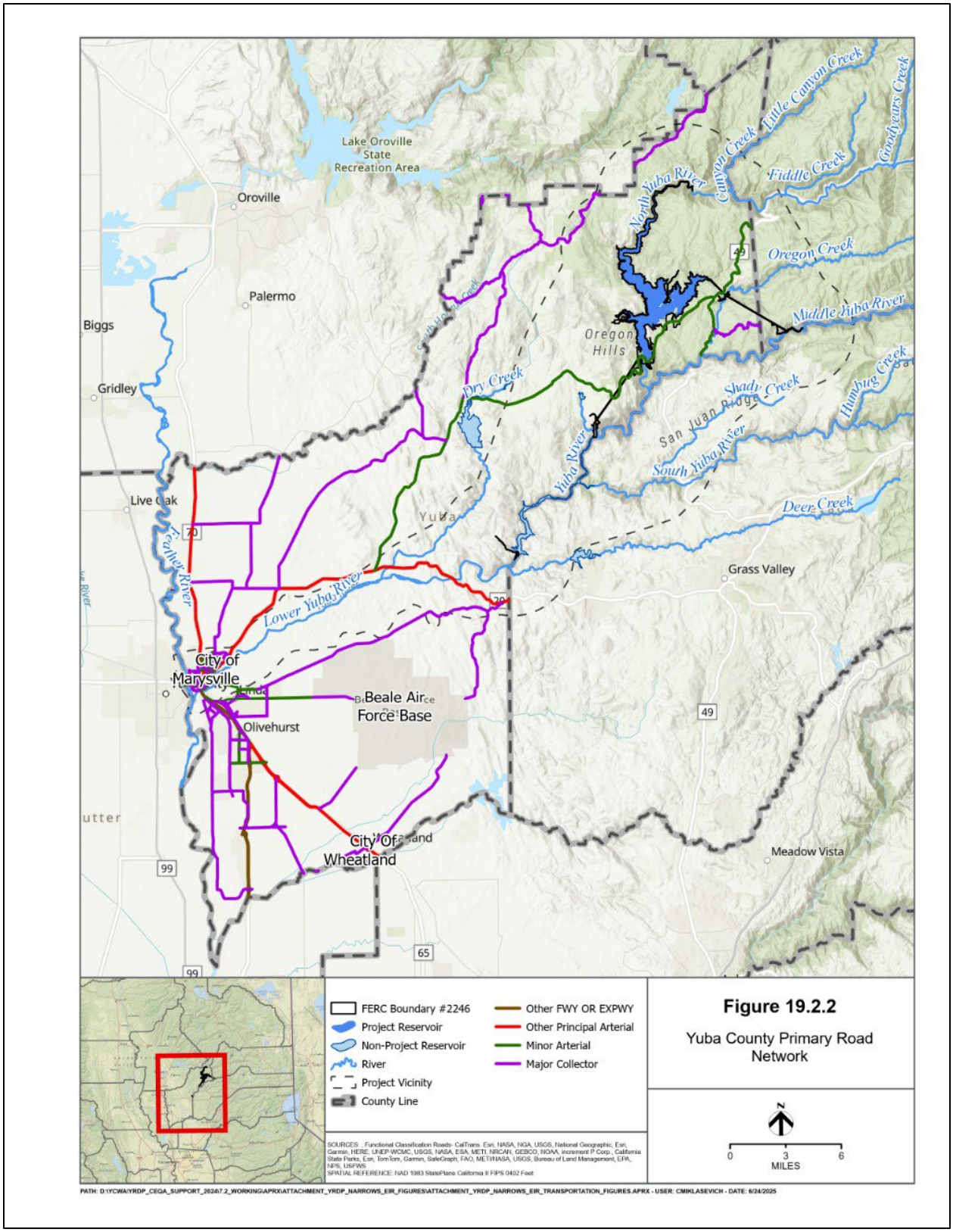

Figure 19.2-2. Yuba County Primary Road Network

- County Road 169, extending north from Marysville Road past the Emerald Bay Marina and the Cottage Creek Campground.
- Kelly Ranch Road, which extends east of Marysville Road. Campground facilities are proposed in the area near the intersection with Marysville Road (see Chapter 2, Project Description)
- Log Cabin Road, extending east of SR 49 to Log Cabin Diversion Dam.
- Lake Francis Road/Lake Francis Extension Road, extending south from the community of Robbins to the New Colgate Powerhouse.
- Scott Forbes Road, extending east from the community of Sicard Flat to Englebright Reservoir. A spur from this road extends south to the Narrows 2 Powerhouse.

Yuba Water has installed access roads off Marysville Road to its Schoolhouse and Hornswoggle Campgrounds. It also has a road that extends east from Marysville Road to New Bullards Bar Dam. This road is gated, and access by the public is not permitted. Other private roads in the area serve mainly residences scattered throughout the Project Area and vicinity.

The Forest Service has several roads in the vicinity of YRDP facilities. Forest Service Road 0008-010 is located within the Tahoe National Forest south of Marysville and provides access to New Bullards Bar Dam. Forest Service Road 0008-009, also known as Vista Point Road, extends west of Marysville Road, then north to a Yuba Water facility. Forest Service Road 0008-004 extends north from Marysville Road at its intersection with Kelly Ranch Road to the Dark Day Campground and Boat Launch. .

19.2.1.2 Nevada County

Nevada County maintains approximately 569 miles of roadways. Numerous county roadways provide intermediate and localized access to rural areas of the county, as well as the more populated cities of Grass Valley, Nevada City, and Truckee and the communities of Lake Wildwood, Alta Sierra, Lake of the Pines, and others (Figure 19.2-3). Most roads are two lanes. Nevada County also has an extensive network of roads used by off-highway vehicles. The Forest Service manages 166 miles of roads in Nevada County. Most of these roads are within the Tahoe National Forest (NCTC 2018).

The only public roads in Nevada County that provide access to YRDP/Narrows Project facilities are Mooney Flat Road and Englebright Dam Road. A two-lane road, Mooney Flat Road extends north of SR 20, then turns east until it ends at the community of Lake Wildwood. Englebright Dam Road extends west from Mooney Flat Road to Englebright Dam and the Narrows 1 Powerhouse. No Forest Service roads are in the vicinity.

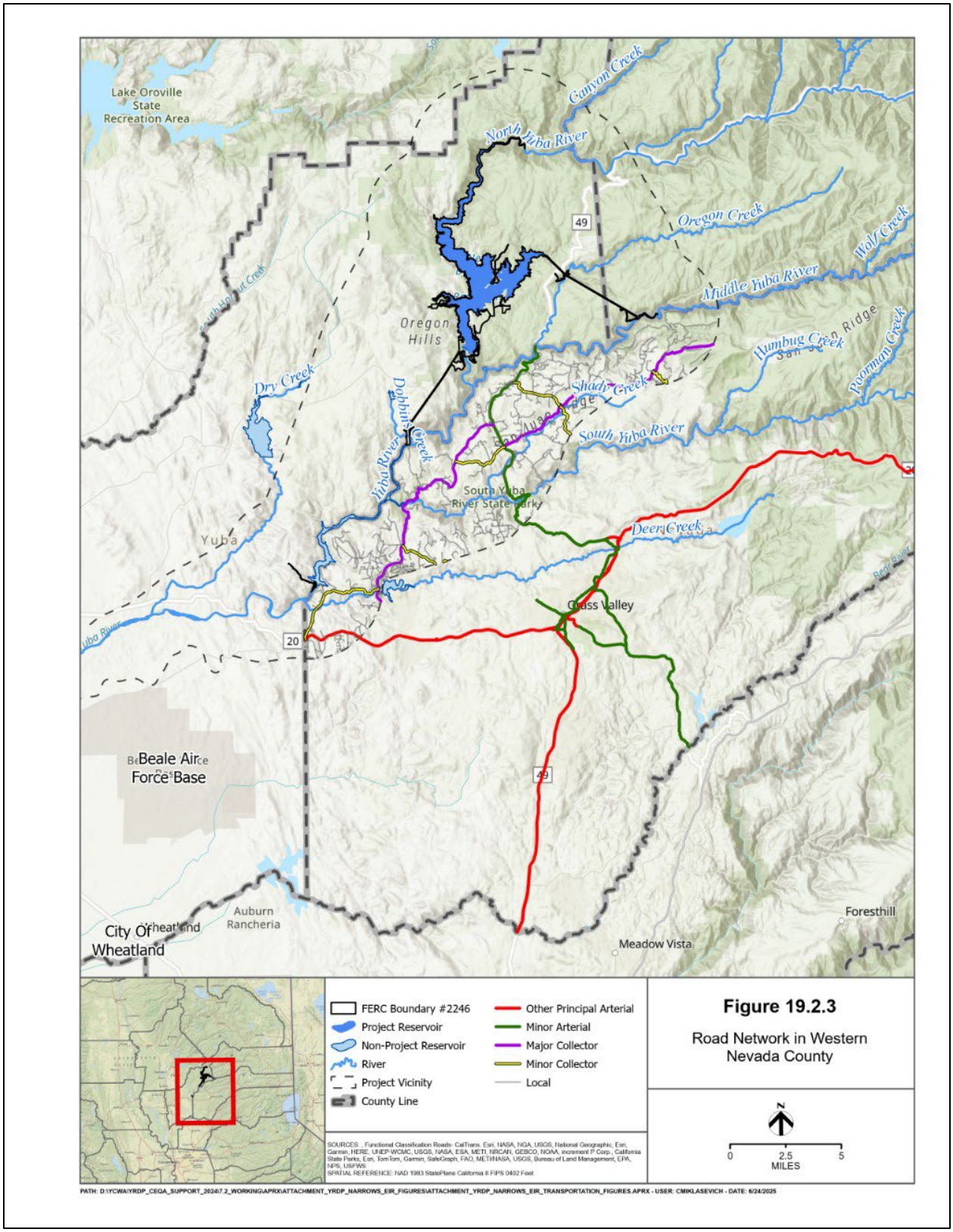

Figure 19.2-3. Road Network in Western Nevada County

19.2.1.3 Sierra County

The roadway system in Sierra County totals approximately 760 maintained miles (Figure 19.2-4). In addition to private roadways, the public road system consists of 102 miles in the state highway system, 545 miles in the county roadway system, 7 miles of city streets in Loyalton, and 107 miles maintained by federal agencies, mainly the Forest Service (SCTC 2020).

The Our House Diversion Dam is in Sierra County. This facility is accessed from Our House Dam Road, a two-lane that extends south from Ridge Road in the community of Pike to the dam. No Forest Service roads are in the vicinity.

19.2.2 Other Transportation Facilities

Transportation facilities other than roads are limited in the Project Area. There are no public-use airports in the Project Area - the closest airport is the Milhous Ranch Airport approximately 5.5 miles southeast of the Project Area (see Chapter 17, Hazards). The Brownsville Aero Pine Airport is approximately 9 miles to the northeast. There are no railroads within the Project Area. Two separate Union Pacific Railroad tracks run parallel to the Feather River through Yuba County.

No public transportation services are available in the Project Area - the closest transit services are in the City of Marysville and in the Penn Valley and Lake Wildwood communities in Nevada County (Figure 19.2-5). Given the rural character of the Project Area, pedestrian facilities are very limited.

The Yuba County Bikeway Master Plan Update designates all bicycle lanes in Yuba County (Figure 19.2-6). There are no bicycle facilities within the Yuba County portion of the Project Area - the closest bicycle facility is a Class II bicycle lane along portions of Willow Glen Road within the Challenge-Brownsville community (Yuba County 2012). Likewise, there are no bicycle facilities within the Nevada County portion of the Project Area - the closest facility is a Class I bicycle path in the community of Penn Valley (NCTC 2019). No bicycle facilities are in the Sierra County portion of the Project Area (SCTC 2012).

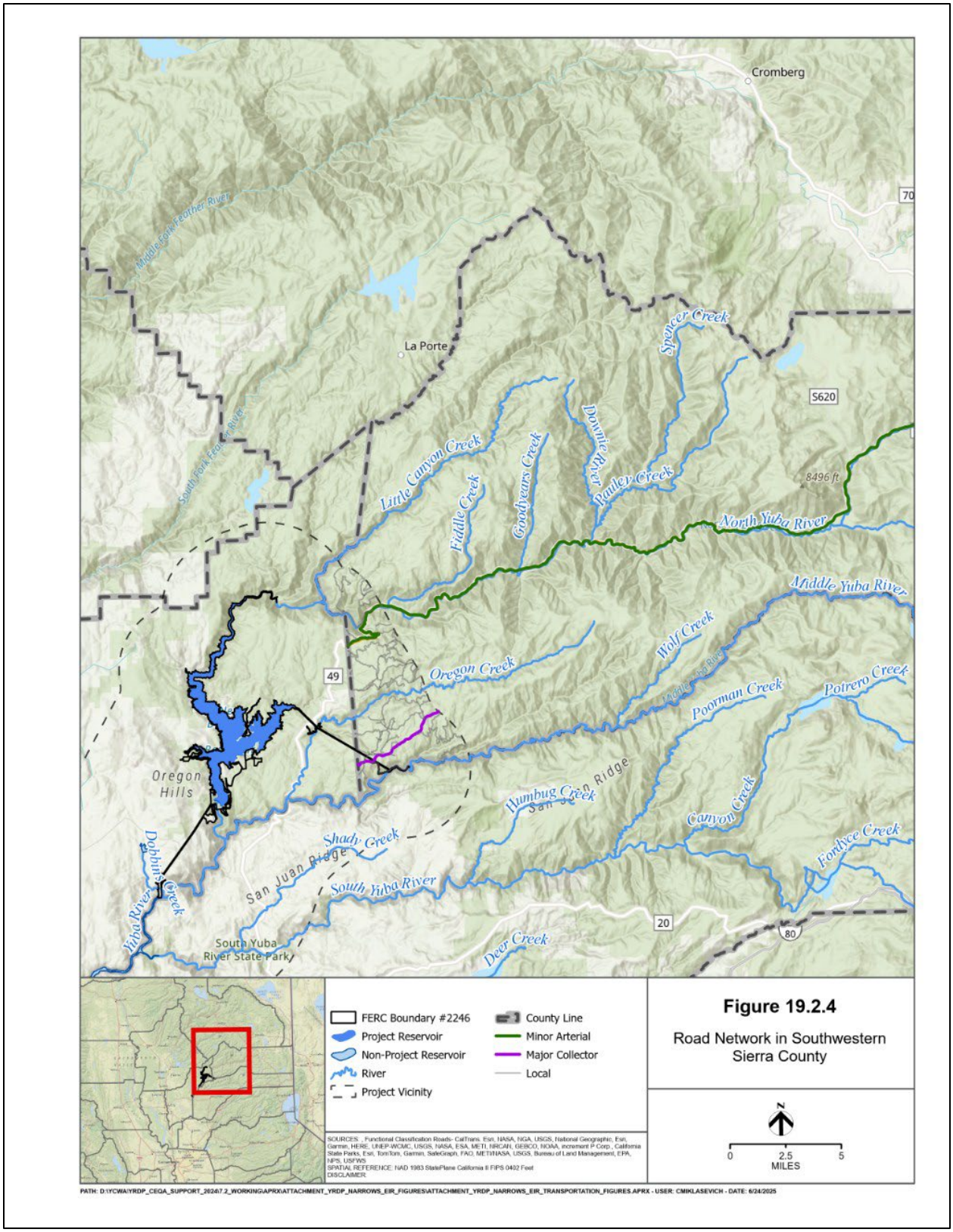

Figure 19.2-4. Road Network in Southwestern Sierra County.

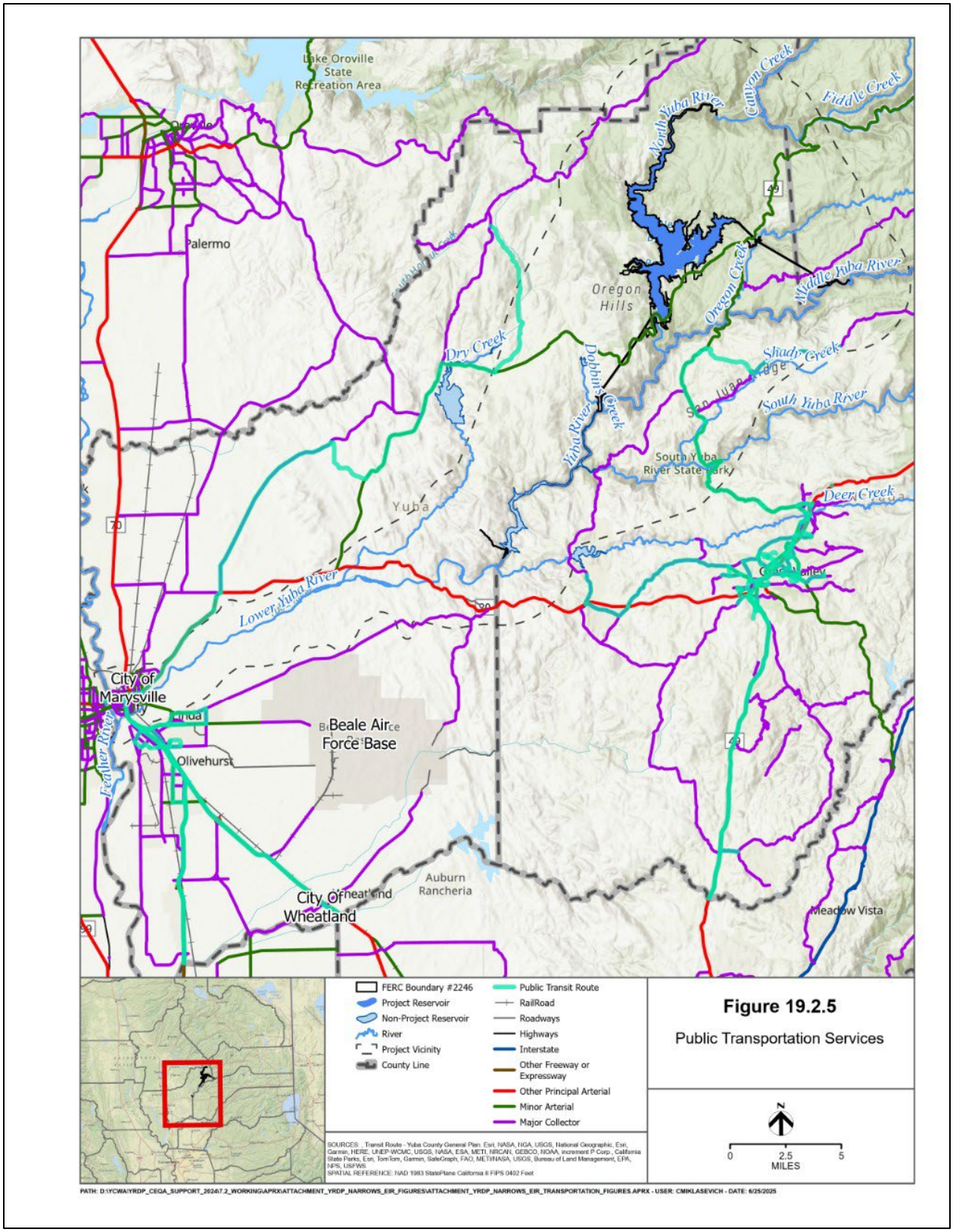

Figure 19.2-5. Public Transportation Services

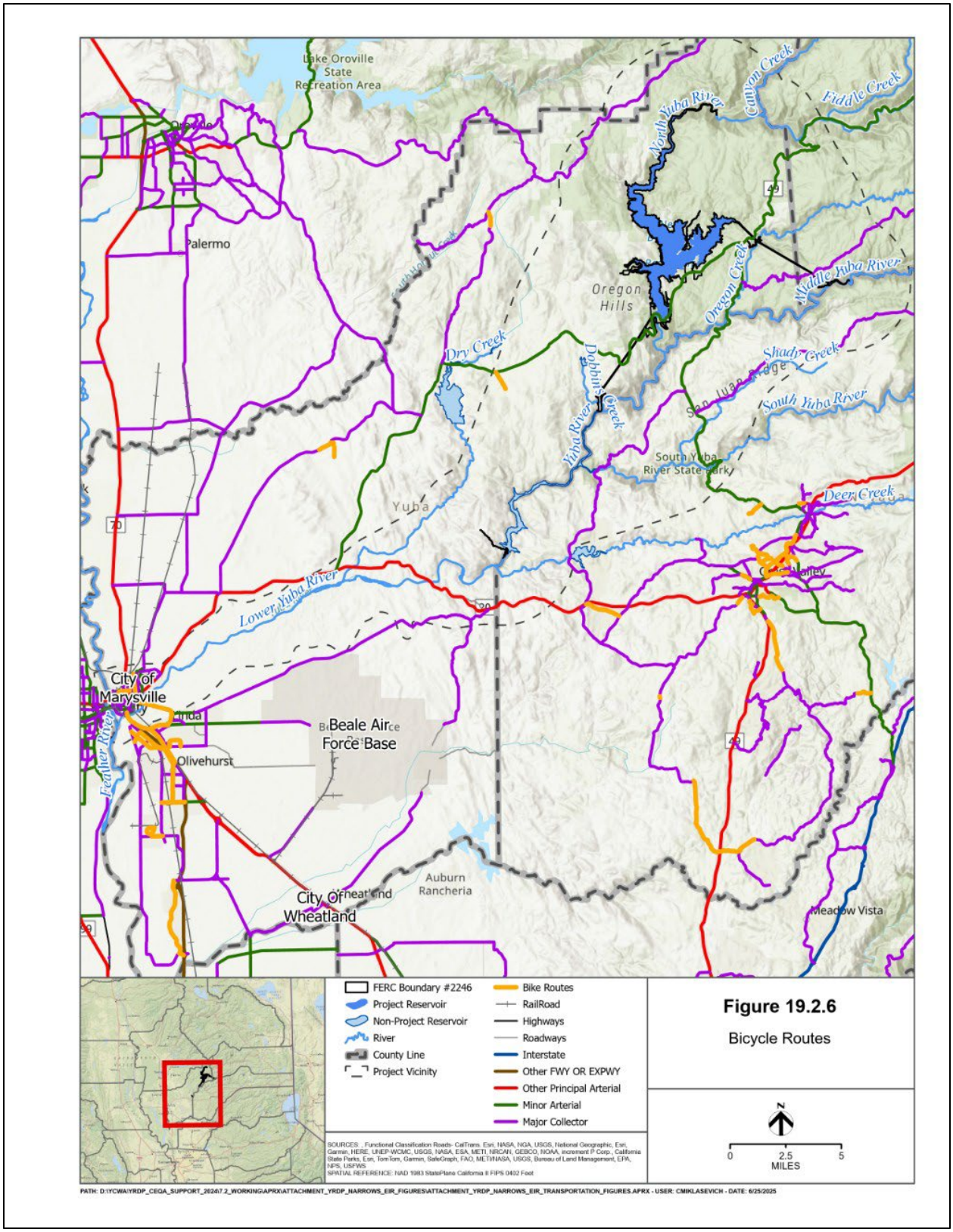

Figure 19.2-6. Bicycle Routes

19.3 Regulatory Setting

19.3.1 Federal

19.3.1.1 Tahoe National Forest Land and Resource Management Plan

The purpose of the Tahoe National Forest Land and Resource Management Plan (LRMP) is to direct the management of the Tahoe National Forest, to ensure the wise use and protection of its resources, to fulfill legislative requirements, and to address local, regional, and national issues (Tahoe National Forest 1990). The following management direction from the LRMP pertaining to transportation is applicable to the Proposed Projects:

Management Direction: Facilities

1. Develop an efficient and environmentally sound transportation system that provides access to TNF lands and appropriate access to private lands.
2. Manage existing transportation facilities to facilitate resource management, protect wildlife, meet water quality objectives, and provide safe recreation access.

The following Forest-wide Standards and Guidelines pertaining to transportation are applicable to the Proposed Projects:

68. Transportation System Management

1. Restrict road, trail, and off-highway use to the extent necessary for protection of threatened, endangered, and sensitive plants or animals, essential wildlife functions, cultural resources, riparian zones and wetlands.
2. Eliminate motorized vehicle use in riparian areas and wetlands except on system roads and designated routes and stream crossings.

19.3.1.2 Plumas National Forest Land and Resource Management Plan

The purpose of the Plumas National Forest LRMP is to direct the management of the Plumas National Forest. It is intended to guide efficient use and protection of National Forest resources, to fulfill legislative requirements, and to balance local, regional, and national issues (Plumas National Forest 1988). The following Forest-wide Standards and Guidelines pertaining to transportation are applicable to the Proposed Projects:

Facilities – Roads

General Direction: Construct/reconstruct roads to minimum standards achieving maximum economy and resource protection.

Standards and Guidelines

- If a road cannot be maintained at the level needed for its purpose, reconstruct it to the appropriate higher or lower standard.
- Where year-round, full-time use is needed, construct roads to the minimum all-weather standards that will suffice.

General Direction: Operate roads at the minimum standards providing utility and resource protection.

Standards and Guidelines

- During the planning period, establish road management objectives for each PNF road according to the following:

Maximum and Moderate Access

- Open roads for public, commercial, and/or administrative use. If planned and publicized, allow temporary closures of less than one year.

19.3.2 State

19.3.2.1 SB 743 and CEQA Guidelines Section 15064.3

SB 743, enacted in 2013, seeks to balance congestion management needs and mitigation of the environmental impacts of traffic with statewide GHG emission reduction goals. SB 743 directed the OPR to develop an alternative mechanism for evaluating transportation impacts and to amend the CEQA Guidelines to provide a transportation impact analysis framework that prioritizes reducing GHG emissions, replacing the prior focus of minimizing automobile delay.

In 2018, OPR issued a Technical Advisory on evaluating transportation impacts under CEQA. The Technical Advisory stated that the preferred metric for evaluating impacts is vehicle miles traveled (VMT), rather than the then-commonly used Level of Service (LOS), which addresses vehicle traffic flow (OPR 2018). The VMT metric measures the total miles traveled by vehicles associated with a project by multiplying the number of vehicle trips by their lengths. Unlike LOS, VMT accounts for the total transportation environmental impact, including use of non-vehicle travel modes such as public transit, walking, and bicycling. The use of VMT in CEQA analysis by lead agencies became mandatory on July 1, 2020.

The OPR Technical Advisory guidance was incorporated into the CEQA Guidelines as Section 15064.3. Section 15064.3(b) sets forth criteria for analyzing transportation impacts using the preferred VMT metric:

- VMT exceeding an applicable threshold of significance may indicate a significant impact.

- Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing "high-quality transit corridor" should be presumed to cause a less-than-significant transportation impact.
- Projects that decrease VMT in the project area, compared to existing conditions, should be presumed to cause a less-than-significant transportation impact.

In addition, the 2018 OPR Technical Advisory discussed "screening thresholds" that quickly identify when a project should be expected to cause a less-than-significant VMT impact without conducting a detailed study. These screening thresholds include (OPR 2018):

- **Small Projects –** Defined as projects that generate or attract fewer than 110 average daily vehicle trips.
- **Affordable Housing –** Defined as a project consisting of deed-restricted affordable housing.
- **Local-Serving Retail** - Defined as retail uses of 50,000 square feet or less.
- **Projects in Low VMT-Generating Area** - Defined as a residential or office project that is in a VMT efficient area based on an available VMT Estimation Tool. The project must be consistent in size and land use type (i.e., density, mix of uses, transit accessibility, etc.) as the surrounding built environment.
- **Proximity to High Quality Transit** – Defined as employment and residential development located within one-half mile of a high-quality transit corridor offering 15-minute headways (i.e., stops every 15 minutes).

For projects that do not meet any of these screening criteria, the OPR Technical Advisory suggests that a proposed residential project 15% or more below existing residential VMT per capita, measured against the region or city, would indicate a less-than-significant transportation impact. For office projects, the metric would be 15% or more below existing regional VMT per employee. For retail projects, a net decrease in total VMT would indicate a less-than-significant impact. No thresholds for other land uses were recommended, but OPR suggests that lead agencies may develop their own thresholds that may include other land use types (OPR 2018).

The roads that would be most affected by the Proposed Projects are in Yuba County. In its analyses of VMT impacts in its environmental documents, Yuba County follows the OPR Technical Advisory guidance. It has not established its own VMT thresholds, particularly for infrastructure and recreation projects such as those proposed for the YRDP. For this DEIR, a significance threshold for VMT has been identified in the Impact Assessment Methodology section below.

19.3.3 Regional/Local

19.3.3.1 SACOG Metropolitan Transportation Plan/Sustainable Communities Strategy 2035

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento region. Members include the Counties of El Dorado, Placer,

Sacramento, Sutter, Yolo, and Yuba, as well as 22 cities. SACOG provides transportation planning and funding for the region. In addition to preparing the region's long-range transportation plan, SACOG approves the distribution of affordable housing in the region and assists in planning for transit, bicycle networks, clean air, and airport land uses.

SACOG is the metropolitan planning organization responsible for developing the State- and federally required Metropolitan Transportation Plan (MTP) every four years, along with a State-required SCS. The most recent version, the 2020 MTP/SCS, was adopted in 2019. The MTP/SCS is the Federally mandated long-range planning document for identifying and programming roadway improvements throughout the Sacramento region. To receive Federal funding, transportation Projects nominated by cities, counties, and agencies must be consistent with the MTP (SACOG 2019b).

The MTP was adopted by the Yuba County Transportation Commission to serve as the County's RTP, a planning document developed by regional transportation planning agencies such as the Yuba County Transportation Commission in cooperation with Caltrans and other stakeholders. The MTP indicates various improvements on SR 20, some of which have been completed. Improvements to SR 49 have also been planned, as have turn pockets and shoulder widening on Marysville Road (SACOG 2019b).

19.3.3.2 Nevada County Regional Transportation Plan

The 2016 Nevada County RTP was developed by the Nevada County Transportation Commission to document the transportation policy, actions, and funding recommendations that will meet the short- and long-term access and mobility needs of Nevada County residents from 2015 to 2035. The RTP includes a Policy Element that describes the key issues relevant to planning in Nevada County, other plans that affect the development of the RTP, and public participation in the development of the plan. It also includes an Action Element that identifies short- and long-term actions to address the needs of the transportation system and to meet the goals and objectives of the RTP, and a Financial Element that outlines the financial assumptions and forecasts of transportation costs and revenues necessary to implement the Action Element (NCTC 2018). No proposed improvements have been identified in the Nevada County portion of the Project Area. The Nevada County RTP is in the process of being updated.

19.3.3.3 Sierra County 2020 Regional Transportation Plan

The purpose of the Sierra County 2020 RTP is to provide a transportation vision for the region, supported by goals, for 10- and 20-year planning horizons. Like the Nevada County RTP, the Sierra County RTP contains a Policy Element, an Action Element, and a Financial Element. No proposed improvements have been identified in the Sierra County portion of the Project Area (SCTC 2020).

19.3.3.4 Yuba County 2030 General Plan

The Yuba County 2030 General Plan Circulation Element sets, as Goal CD 16, the maintenance of a roadway system that provides adequate LOS, as funding allows, and that is consistent with the County's planning, environmental, and economic policies. LOS is a qualitative measure of

traffic flow on a roadway segment or through an intersection. LOS is described on a scale from A to F, with A representing best traffic conditions and F the worst. Under General Plan Policy CD 16.3, LOS D shall be maintained, as feasible, during the PM Peak Hour on County roads in rural areas (Yuba County 2011b). Table 19.3-1 shows the LOS thresholds used for Yuba County roads.

Table 19.3-1. Daily LOS Traffic Volume Thresholds

Roadway Capacity Class	Maximum Peak-Hour Volume at:		
	LOS C	LOS D	LOS E
Freeway – 4 Lanes	63,600	77,400	86,400
Conventional Highway – 6 Lanes	48,000	54,000	60,000
Conventional Highway – 4 Lanes	32,000	36,000	40,000
Conventional Highway – 2 Lanes (Level Terrain)	7,900	13,500	22,900
Conventional Highway – 2 Lanes (Rolling Terrain)	7,100	12,400	20,500
Arterial (Urban) – 2 Lanes	14,400	16,200	18,000
Arterial (Urban) – 4 Lanes	28,800	32,400	36,000
Arterial (Urban) – 6 Lanes	43,200	48,600	54,000
Arterial (Rural) – 2 Lanes	7,100	12,200	20,000
Collector (Urban) or Major Collector (Rural)	7,000	10,000	13,000
Minor Collector	6,700	7,800	8,900

Source: Yuba County 2011a.

While the use of LOS to analyze the environmental impacts of a project under CEQA has been superseded by the use of VMT, in accordance with SB 743 (see above), LOS is used by the County to gauge traffic flow on a road and to determine if road improvements may be required. As discussed in the Impact Assessment Methodology below, LOS information is provided solely to identify if the Proposed Projects would conflict with any County transportation plans and policies that would require roadway or other improvements.

19.3.3.5 Nevada County and Sierra County General Plans

As with the Yuba County General Plan, the Nevada County General Plan has established a minimally acceptable LOS. In Nevada County, this is C in designated Rural Regions and D in designated Community Regions, the latter being more developed areas. For two-lane local roads, the maximum threshold for LOS C is 4,300 (Nevada County 2014)

The Sierra County General Plan has established a target LOS of "C" on all State and County roadways. The Sierra County has not established LOS traffic volume thresholds in its General Plan. As noted, the use of LOS to analyze the CEQA environmental impacts of a project has been superseded by the use of VMT.

19.4 Impact Assessment Methodology

The impact analysis for transportation follows the approach in the general overview described in Chapter 4. A resource-specific methodology, described below, is used for the analysis of environmental impacts. The geographical scope of the impact analysis on transportation is the area within and adjacent to the Project Area.

As noted, VMT is now the preferred metric to use in determining the environmental impacts of projects as they relate to transportation, rather than LOS. While LOS is no longer a preferred metric for impact analysis, it is still used by local governments in their General Plans and other transportation documents to set standards for traffic flow on roads and intersections, as noted in

the General Plan discussions in the Regulatory Setting. Because of this, LOS will be discussed in this chapter when appropriate.

19.4.1 Construction

A desktop analysis was completed to collect and analyze data related to traffic in the Project Area related to construction-related vehicle and equipment traffic. Because the impacts of the improvements would occur mainly on roads in Yuba County, information related to traffic on these roads was collected using the Yuba County 2030 General Plan and Draft Environmental Impact Report and the SACOG MTP/SCS and Draft Environmental Impact Report, with additional information from the Caltrans Traffic Volumes database.

Information from these documents was used to determine if construction traffic would lead to substantial changes to traffic flow, potential hazards for traffic, and impediments to emergency vehicle access. In making these determinations, consideration is given to the construction schedule anticipated for the YRDP improvements described in Chapter 2, Project Description.

The Narrows Project would not involve any construction activities. Therefore, construction impacts related to the Narrows Project are not analyzed in this chapter.

19.4.2 Operations

A desktop analysis was completed to collect and analyze data related to transportation during operations in the Project Area. For the purposes of this analysis, information related to transportation operations was collected using the following sources:

- Yuba County 2030 General Plan and Draft Environmental Impact Report
- Nevada County RTP, 2015-2035
- Sierra County 2020 RTP
- SACOG MTP/SCS and Draft Environmental Impact Report
- Caltrans Traffic Volumes database

In addition, information from Chapter 11, Recreation, was used in evaluating the potential impacts of recreation improvements on traffic. These documents provided information on traffic volumes and traffic flow, which was used to determine consistency with applicable policies concerning transportation, including CEQA Guidelines Section 15064.3(b). Potential safety issues associated with traffic, including incompatible uses and emergency vehicle access, used the information in the documents cited above to analyze these issues.

Modeling of air quality impacts conducted in Chapter 15, Air Quality and Greenhouse Gas Emissions, made assumptions about the amount of construction vehicle traffic that would be generated by YRDP projects (see Appendix 15B). The following projects would generate construction vehicle trips that would most likely affect Marysville Road, assuming the maximum amount of traffic generated:

- New Colgate TDS: 40 one-way trips per day (24 worker, 6 vendor, 10 haul trucks)

- Recreation facility improvements: 32 one-way trips per day (20 worker, 6 vendor, 6 haul trucks)
- Recreation facility major rehabilitation: 48 one-way trips per day (28 worker, 10 vendor, 10 haul trucks)
  Boat launch: 48 one-way trips per day (28 worker, 10 vendor, 10 haul trucks)

Part of the proposed YRDP development includes new and upgraded trails that would be used mainly for recreation. Chapter 11, Recreation, discusses these trails and their potential impacts. As such, the impacts of trails are not analyzed in this chapter.

19.4.3 Impact Indicators and Significance Criteria

For transportation, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on transportation if it would:

- **Impact TRANS-1:** Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.
- **Impact TRANS-2:** Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b). Yuba County has not established its own VMT thresholds, particularly for infrastructure and recreation projects such as those proposed for the YRDP. Therefore, this analysis uses a no-net increase threshold for VMT - the same threshold as that recommended for retail projects (OPR 2018). For the purposes of this analysis, the screening criteria described in the Regulatory Setting would be applied first to determine if conflict or inconsistency occurs.
- **Impact TRANS-3:** Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- **Impact TRANS-4:** Result in inadequate emergency access.

19.5 Environmental Impact Analysis

19.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact TRANS-PP-1: Construction Impacts on Transportation Plans

Construction associated with the YRDP, described in Chapter 2, Project Description, is expected to generate a temporary increase in traffic on County roads and State Routes during the construction period from mobilization and demobilization of construction equipment, materials deliveries, off-hauling construction debris, hauling of excavated soil and rock to the disposal area, and worker vehicle trips. Daily worker commutes and hauling trips for disposal of soil and rock would generate the most trips. Haul trucks would most likely use Marysville Road to access the construction sites for deliveries. Depending on the time of construction, there could be an impact on traffic flow on County roads near the construction sites, mainly Marysville Road. No construction is planned near the State Routes.

As noted, Marysville Road is classified as a Rural Arterial, and the portion of Marysville Road west of SR 49 experienced 720 average daily trips. Based on the information in Table 19.3-1, this trip volume is well below the 12,200 maximum trip volume for LOS D, the minimally acceptable LOS for County roads as established by the Yuba County General Plan. Construction equipment is typically brought to the construction site and stays there until the work is completed. The main concern would be vehicles driven by construction workers to and from the construction site, delivery vehicles, and haul trucks.

Construction work would be spread out over time, and different projects would be constructed at different times. Yet, even assuming a "worst case" scenario in which all these projects would be worked on simultaneously, the total daily volume of traffic on Marysville Road would be 336 trips, assuming all one-way trips would become round trips, When added to the existing volume, the total trips would still place Marysville Road well below the maximum 12,200 threshold for LOS D, and also well below the maximum 7,100 threshold of LOS C. When added to the traffic volumes of SR 20 and SR 49, the resultant traffic volumes would remain below the maximum threshold of LOS D, using the Conventional Highway – 2 Lanes (Rolling Terrain) class.

As indicated in Tables 2.4-4 and 2.4-5 in Chapter 2, Project Description, Yuba Water proposes to include 12.47 miles of Primary YRDP Project Roads and Trails and 4.07 miles of Recreation Roads as its responsibility. The YRDP *Transportation System Management Plan* provides guidance for the rehabilitation and maintenance of Primary Project Roads and Trails and Project Recreation Roads for the Project, with special emphasis on Primary Project Roads and Trails and Project Recreation Roads on NFS land. Yuba Water's maintenance program for these roads has two components with regards to timing of road maintenance activities: short-term and long-term maintenance. Short-term road maintenance is defined as routine annual maintenance for localized and seasonal repairs to address normal wear and tear during road use under typical annual weather conditions. Long-term maintenance is defined as repairs that are scheduled around specific events that impact the overall integrity of a given road, such as heavy-haul events or unusually heavy storm events. The *Transportation System Management Plan* also describes specific rehabilitation actions for Primary Project and Recreation roads on NFS land in "poor" condition or that have road features (e.g., culverts and landslides) that were rated during the roads inventory as having a high erosion risk (YCWA 2014).

The majority of the road segments listed in the tables are private roads used mainly by Yuba Water for its O&M activities. Road segments on property owned by the State of California and the USACE are also used for that purpose, as are some road segments owned by the Forest Service. However, some of these Forest Service road segments, including campground spurs, provide access to the recreation facilities that are used by the public. The *Transportation System Management Plan* specifies that a construction and reconstruction implementation schedule shall be developed to bring existing Primary Project and Recreation roads and associated facilities (i.e., culverts, gates, bridges, crossings, cribwalls and barricades) on NFS land into compliance with Forest Service standards that achieve Forest Service Road Management Objectives and Motorized Travel Management Guidelines for Project Roads.

Construction impacts would be temporary and would cease when construction work is completed. As discussed above, the construction traffic is not expected to significantly affect traffic flows on the main roads in the area (SR 20, SR 49, and Marysville Road). Therefore, additional construction

traffic is not expected to degrade LOS on these roads below D and therefore would not conflict with County General Plan Policy CD 16.3.

As described in the Environmental Setting, there are no transit, bicycle or pedestrian facilities in the Project Area. Because of this, YRDP construction would not affect any existing facilities. As discussed in Chapter 2, Project Description, trails would be installed. However, these trails would be used for recreation and not for pedestrian travel.

In summary, YRDP construction would have temporary impacts that would interrupt traffic flow only minimally and would cease once construction work is completed. YRDP construction would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the impact would be **less than significant**. No CEQA mitigation is required.

YRDP Impact TRANS-PP-2: Operational Impacts on Transportation Plans

The YRDP would comply with all applicable transportation regulations. As the proposed YRDP improvements would occur away from SR 20, SR 49, and Marysville Road, they would not conflict with the improvements to these roads proposed in the 2020 SACOG MTP.

There are currently 106 campsites, 15 picnic sites, and three boat ramps in the YRDP area, all in Yuba County (YCWA 2017). The proposed recreation improvements would add potentially up to 55 campsites, along with an additional 15 picnic sites, all in Yuba County. The additional recreation facilities, should visitors take advantage of them, would increase traffic on local roads. As noted in Chapter 18, Wildfire, the average number of vehicles at the recreation facilities per day during the peak season was approximately 586. With the proposed new recreation facilities, approximately 331 vehicles per day would be added during the peak season, totaling 917 vehicles. This traffic would be seasonal, as most facilities would be closed generally between mid-autumn and mid-spring, and it is expected that any maximum traffic would be generated mainly on weekends and holidays.

Most of the recreation traffic would access the YRDP facilities via Marysville Road. As discussed in the Regulatory Framework, the minimum acceptable LOS on County roads is D, and the maximum traffic volume on the Rural Arterial class for LOS D is 12,200. Current traffic on Marysville Road is 720. When adding traffic from existing and proposed new facilities, the total traffic on Marysville Road would be 1,637. This traffic would be well below the maximum 12,200 threshold for LOS D.

Based on the analysis presented, along with the anticipated timing of the trips, traffic generated by the YRDP recreation facilities, both existing and new, would not affect Marysville Road such that a conflict with County General Plan Policy CD 16.3 would occur. The same would apply to SR 20 and SR 49, which would provide access for recreation traffic to Marysville Road. The maximum LOS D threshold for the State Routes, both classified as Conventional Highway – 2 Lanes (Rolling Terrain), is 12,400. When both existing and new recreation traffic are added to the existing traffic volumes to SR 20 (8,800) and SR 49 (1,250), the results would remain well below the maximum LOS D threshold of 12,400.

As noted, Yuba Water manages Primary Project Roads and Trails, along with Recreation Roads. The Primary Roads and Trails primarily serve Yuba Water service vehicles, and the Primary Project Roads and Trails proposed to be added would have the same function. The increased traffic from the addition of recreation facilities would not affect traffic on these Primary Roads and Trails. No improvements are currently proposed to these roads, but some rehabilitation would be conducted in accordance with the *Transportation System Management Plan* (see below).

The Recreation Roads primarily serve the YRDP recreation facilities. The anticipated recreation traffic would utilize these roads. However, no improvements are currently proposed that would have potential environmental impacts. Some rehabilitation of these roads would be conducted in accordance with the *Transportation System Management Plan*

Yuba Water proposes to manage the maintenance and rehabilitation of the Primary Project Roads and Trails under the proposed *Transportation System Management Plan*. The *Transportation System Management Plan* would establish a forum for coordination of road maintenance activities between Yuba Water and the Forest Service and memorialize agreements and responsibilities for maintaining project roads, trails, and access to recreation sites, particularly roads on NFS lands. The plan includes (YCWA 2014):

1. A short-term maintenance program. Short-term maintenance is defined as routine annual maintenance for localized and seasonal repairs to address normal wear and tear during road use under typical annual weather conditions. Activities include spot treatment of asphalt paving, blading dirt roads and aggregate surfaces, filling in potholes, minor and major trimming of vegetation along the travel surface edge to maintain a line-of sight for safety purposes, and repairing/replacing signs and markers. Short-term maintenance also includes routine inspection and maintenance of road drainage features, along with clearing of culverts and drainage ditches and cleanup of rock falls and landslides. Except for trimming of vegetation, routine maintenance would occur on existing roads. Environmental impacts would be limited.
2. A long-term maintenance program. Long-term maintenance is defined as repairs that are scheduled around specific events that impact the overall integrity of a given road, such as heavy-haul events or unusually heavy storm events. Long-term road repairs have historically occurred on average about every 7-10 years, and are undertaken in addition to the short-term road maintenance. For road segments on NFS land, maintenance would be conducted in accordance with Forest Service standards and specifications.
3. Road rehabilitation actions for Primary Project and Recreation roads on NFS land in "poor" condition or that have road features (e.g., culverts and landslides) that were rated during the roads inventory as having a high erosion risk. Attachment A of the *Transportation System Management Plan* identifies these roads, which include segments of Our House Diversion Dam Road, Log Cabin Diversion Dam Road, and Garden Valley Road. Proposed rehabilitation includes upgrading of stream crossings, repair of erosion sites, and rock fall hazard work. Rehabilitation also includes the implementation of specified BMPs described in Forest Service Handbook, Region 5, 2509.22 – Soil and Water Conservation Handbook, Water Quality Management, Road Management BMPs.

4. Measures protecting sensitive areas, mainly stream crossings.
5. Other provisions for Primary Project Roads and Recreation Roads on NFS land that address planning and inventory; operations, maintenance, and road-associated debris; construction and reconstruction; monitoring; and emergency repairs.

The 2019 FEIS concluded that implementation of the Transportation System Management Plan would help to ensure that project roads are maintained to current standards, allowing continued and improved public access to and through the Project Area (FERC 2019).

Based on the evaluation conducted, the conclusion reached is the same as that of the 2019 FEIS. YRDP operations would not affect roads such that they would be in conflict with applicable transportation plans and policies, with the implementation of the *Transportation System Management Plan.* As noted above, there are no transit, bicycle or pedestrian facilities in the Project Area.

In summary, YRDP operations would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the impact would be **less than significant,** and no CEQA mitigation would be required.

YRDP Impact TRANS-PP-3: Construction Impacts on Consistency with CEQA Guidelines §15064.3.

YRDP construction would generate an increase in VMT during the construction period, mainly from construction workers and delivery and haul activities (see YRDP Impact TRANS-PP-1). Based on information used in the analysis of air quality impacts in Chapter 15 (see Appendix 15B), and assuming the "worst case" scenario described in YRDP Impact TRANS-PP-1, the total daily VMT generated by construction activities would be 13,440. In all likelihood, the actual daily VMT would be less, since not all YRDP construction projects would occur simultaneously.

Neither the OPR Technical Advisory nor Yuba County has established any VMT significance thresholds specifically applicable to vehicle trips associated with construction. The OPR Technical Advisory only mentions construction in the context of implementing energy-efficient construction and travel demand management approaches to reduce GHGs (OPR 2018). CEQA Guidelines Section 15064(b)(3) states that "For many projects, a qualitative analysis of construction traffic may be appropriate." However, no guidance is provided as to when such analysis would be appropriate and how it would be conducted. In the interest of full disclosure of potential impacts, the EIR assumes a no-net increase threshold for VMT and provides the estimated VMT from YRDP construction activities.

VMT resulting from construction is temporary and would be reduced to zero once work is completed. Nevertheless, during construction, there would be an increase in VMT. Based on the estimated VMT and the type of project, YRDP construction activities would not meet the screening criteria established by OPR for smaller projects (see Regulatory Setting).

There is no feasible measure to reduce VMT from these sources below the screening criteria, much less result in no net increase in VMT from construction activities.

In summary, vehicles used in YRDP construction activities would increase VMT in the Project Area and vicinity. As a no-net increase in VMT is the significance threshold, YRDP construction would conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b). Therefore, impacts are considered **significant and unavoidable,** as there are no feasible mitigation measures that can be applied to reduce this impact to a level that would be less than significant.

YRDP Impact TRANS-PP-4: Operational Impacts on Consistency with CEQA Guidelines §15064.3.

Traffic generated by YRDP operations, and subsequently VMT, would be mainly from recreation facility visitors. There would also be a more limited amount of VMT generated by occasional visits to YRDP facilities, both recreation and hydropower, from maintenance and repair vehicles. However, this traffic is not anticipated to significantly change, as hydropower operations would not change, and recreation operation and maintenance would only moderately increase with the added campground facilities.

As noted above, the YRDP would at buildout have up to 165 campsites, along with 30 picnic sites and three boat ramps. Information used in the air quality analysis for Chapter 15 (see Appendix 15C) indicates that VMT in 2012 associated with the recreation facilities was 65,460 per day during the peak season from Memorial Day to Labor Day, and 17,575 per day during the off-peak season, with no measurable VMT during the closure of the recreation facilities for the season. Assuming the same proportion of VMT per recreation facility based on the 2012 data, the proposed new YRDP recreation facilities would add approximately 36,953 VMT per day during the peak season and 9,921 VMT per day during the off-peak season.

Accordingly, YRDP operations relating to recreation facilities, would not meet the screening criteria established by OPR for smaller projects. Given the rural location of the proposed new projects, there is no feasible mitigation to reduce the VMT from these facilities, much less reduce it to a level below the screening criteria or the no-net VMT threshold utilized here due to the lack of significance thresholds applicable specifically to recreation projects. Given the selected significance threshold of no net increase, YRDP operations would conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b). Impacts are considered **significant and unavoidable**.

YRDP Impact TRANS-PP-5: Construction Impacts on Hazards and Emergency Access

Emergency access the YRDP area is provided mainly via Marysville Road, a two-lane road that services much of northeastern Yuba County. The use of Marysville Road for YRDP construction vehicles and equipment, as described above, may temporarily slow traffic speeds but would not impede emergency vehicles traveling along Marysville Road. Construction work would occur on sites away from Marysville Road, so no hazards or impediments to emergency vehicle access would occur.

Construction involving improvements to the existing campgrounds that are not boat-in campgrounds would likely require obstruction of their internal roads. As noted in the *Recreation Facilities Plan,* Yuba Water will aim to complete as much work as possible during periods when the facilities are normally closed; however, it is expected that some work will require closing the

recreation facilities during the typical open season to complete all the proposed work (YCWA 2014). Implementation of the *Recreation Facilities Plan* would ensure there are no campground occupants who would be subject to potential construction hazards or would need emergency assistance.

YRDP construction would have temporary impacts related to hazards and emergency access that would cease once construction work is completed. Project construction would not introduce any new hazards due to design features regarding transportation, and emergency vehicle access would be maintained. YRDP construction impacts would be **less than significant**, and no CEQA mitigation would be required.

YRDP Impact TRANS-PP-6: Operational Impacts on Hazards and Emergency Access

As noted, the proposed YRDP work related to roads would be limited to improving roads within and to recreation facilities. This work would not introduce any new hazards due to design features regarding transportation; in fact, it would likely improve safety. Emergency access would be maintained throughout the YRDP area at the same level as the Existing Condition. Also, as discussed, the proposed *Transportation System Management Plan* would ensure that these roads would be adequately maintained.

As noted, there are 110 campsites, 15 picnic sites, and three boat ramps in the YRDP area, all in Yuba County. The proposed recreation improvements would add up to 55 campsites and 15 picnic sites, also in Yuba County. The added recreation facilities, should visitors take advantage of them, would increase traffic on local roads, as discussed in YRDP Impact TRANS-PP-2. This traffic would be seasonal and would not introduce vehicle traffic that is incompatible with the existing vehicle mix on these roads. The only other source of traffic from YRDP operations under the Proposed Projects would be maintenance vehicles, which would make infrequent trips that are already occurring under the Existing Condition. In summary, YRDP operations would have impacts related to hazards and emergency access that are **less than significant**. No CEQA mitigation is required.

Narrows Impact TRANS-PP-1: Operational Impacts on Transportation Plans

Proposed Narrows Project operations would comply with all applicable transportation regulations, and it would not conflict with the improvements to SR 20 proposed in the 2020 SACOG MTP. The Proposed Narrows Project does not include new roads or recreation facilities. Operations and maintenance activities under the Proposed Narrows Project would not significantly differ from existing activities and therefore would not result in an increase in vehicle trips relative to the Existing Condition. Therefore, Proposed Narrows Project operations would have **no impact** on transportation plans. No CEQA mitigation is required.

Narrows Impact TRANS-PP-2: Operational Impacts on Consistency with CEQA Guidelines §15064.3.

The Proposed Narrows Project does not include new roads or recreation facilities. Operations and maintenance activities under the Proposed Narrows Project would not significantly differ from existing activities and therefore would not result in an increase in VMT relative to the Existing Condition. Therefore, any VMT generated by Proposed Narrows Project operations would not

conflict or be inconsistent with CEQA Guidelines §15064.3(b). The Proposed Narrows Project would have **no impact,** and no CEQA mitigation is required.

Narrows Impact TRANS-PP-3: Operational Impacts on Hazards and Emergency Access

The Proposed Narrows Project does not include new roads or recreation facilities. Operations and maintenance activities under the Proposed Narrows Project would not significantly differ from existing activities and therefore would not result in new or worsened hazards, or impair emergency vehicle access, relative to the Existing Condition. Therefore, Proposed Narrows Project operations would have **no impact** on hazards and emergency access. No CEQA mitigation is required.

19.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact TRANS-Alt1-1: Construction Impacts on Transportation Plans

YRDP construction under Alternative 1 would have the same impacts as under the Proposed Projects because YRDP construction would be the same under both Alternative 1 and the Proposed Projects. For the reasons described under YRDP Impact TRANS-PP-1, YRDP construction under Alternative 1 would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the impact would be **less than significant**.

YRDP Impact TRANS- Alt1-2: Operational Impacts on Transportation Plans

YRDP operations under Alternative 1 would have the same impacts as under the Proposed Projects because non-flow YRDP operations and maintenance activities would be the same under both Alternative 1 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under YRDP Impact TRANS-PP-2, YRDP operations under Alternative 1 would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the impact would be **less than significant**.

YRDP Impact TRANS- Alt1-3: Construction Impacts on Consistency with CEQA Guidelines §15064.3.

YRDP construction under Alternative 1 would have the same impacts as under the Proposed Projects because YRDP construction would be the same under both Alternative 1 and the Proposed Projects. For the reasons described under YRDP Impact TRANS-PP-3, YRDP construction under Alternative 1 would result in a significant increase in VMT for which there is no feasible mitigation. Therefore, a conflict or inconsistency with CEQA Guidelines §15064.3, subdivision (b), would occur, and the impact would be **significant and unavoidable**.

YRDP Impact TRANS- Alt1-4: Operational Impacts on Consistency with CEQA Guidelines §15064.3.

YRDP operations under Alternative 1 would have the same impacts as under the Proposed Projects because non-flow YRDP operations and maintenance activities would be the same under both Alternative 1 and the Proposed Projects, and because changes in flows would not affect

transportation resources. For the reasons described under YRDP Impact TRANS-PP-4, mainly from increased number of visitors to recreation facilities, YRDP operations under Alternative 1 would result in a significant increase in VMT for which there is no feasible mitigation. Therefore, a conflict or inconsistency with CEQA Guidelines §15064.3, subdivision (b), would occur, and the impact would be **significant and unavoidable**.

YRDP Impact TRANS- Alt1-5: Construction Impacts on Hazards and Emergency Access

YRDP construction under Alternative 1 would have the same impacts as under the Proposed Projects because YRDP construction would be the same under both Alternative 1 and the Proposed Projects. For the reasons described under YRDP Impact TRANS-PP-5, YRDP construction under Alternative 1 would not introduce road hazards, and emergency vehicle access would be maintained. Therefore, the impact would be **less than significant**.

YRDP Impact TRANS- Alt1-6: Operational Impacts on Hazards and Emergency Access

Alternative 1 YRDP operations would have the same impacts as under the Proposed Projects because non-flow YRDP operations and maintenance activities would be the same under both Alternative 1 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under TRANS-PP-6, YRDP operations under Alternative 1 would not introduce road hazards (and would likely improve safety), and emergency access would be maintained. Therefore, the impact would be **less than significant**.

Narrows Impact TRANS-Alt1-1: Operational Impacts on Transportation Plans

Narrows Project operations would be the same under Alternative 1 and the Proposed Projects, and would therefore have the same impacts. For the reasons described under Narrows Impact TRANS-PP-1, Narrows Project operations under Alternative 1 would have **no impact** on transportation plans.

Narrows Impact TRANS-Alt1-2: Operational Impacts on Consistency with CEQA Guidelines §15064.3.

Narrows Project operations would be the same under Alternative 1 and the Proposed Projects, and would therefore have the same impacts. For the reasons described under Narrows Impact TRANS-PP-2, Narrows Project operations under Alternative 1 would have **no impact** related to a conflict or inconsistency with CEQA Guidelines Section §15064.3, subdivision (b).

Narrows Impact TRANS-Alt1-3: Operational Impacts on Hazards and Emergency Access

Narrows Project operations would be the same under Alternative 1 and the Proposed Projects, and would therefore have the same impacts. For the reasons described under Narrows Impact TRANS-PP-3, Narrows Project operations under Alternative 1 would have **no impact** related to hazards and emergency access.

19.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact TRANS-Alt2-1: Construction Impacts on Transportation Plans

YRDP construction under Alternative 2 would have the same impacts as under the Proposed Projects because YRDP construction would be the same under both Alternative 2 and the Proposed Projects. For the reasons described under YRDP Impact TRANS-PP-1, YRDP construction under Alternative 2 would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the impact would be **less than significant**.

YRDP Impact TRANS- Alt2-2: Operational Impacts on Transportation Plans

YRDP operations under Alternative 2 would have the same impacts as under the Proposed Projects because non-flow YRDP operations and maintenance activities would be the same under both Alternative 2 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under YRDP Impact TRANS-PP-2, YRDP operations under Alternative 2 would not conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, the impact would be **less than significant**.

YRDP Impact TRANS- Alt2-3: Construction Impacts on Consistency with CEQA Guidelines §15064.3.

YRDP construction under Alternative 2 would have the same impacts as under the Proposed Projects because YRDP construction would be the same under both Alternative 2 and the Proposed Projects. For the reasons described under YRDP Impact TRANS-PP-3, YRDP construction under Alternative 2 would result in a significant increase in VMT for which there is no feasible mitigation. Therefore, a conflict or inconsistency with CEQA Guidelines §15064.3, subdivision (b), would occur, and the impact would be **significant and unavoidable**.

YRDP Impact TRANS- Alt2-4: Operational Impacts on Consistency with CEQA Guidelines §15064.3

YRDP operations under Alternative 2 would have the same impacts as under the Proposed Projects because non-flow YRDP operations and maintenance activities would be the same under both Alternative 2 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under YRDP Impact TRANS-PP-4, mainly from increased number of visitors to recreation facilities, YRDP operations under Alternative 2 would result in a significant increase in VMT for which there is no feasible mitigation. Therefore, a conflict or inconsistency with CEQA Guidelines §15064.3, subdivision (b), would occur, and the impact would be **significant and unavoidable**.

YRDP Impact TRANS- Alt2-5: Construction Impacts on Hazards and Emergency Access

YRDP construction under Alternative 2 would have the same impacts as under the Proposed Projects because YRDP construction would be the same under both Alternative 2 and the Proposed Projects. For the reasons described under YRDP Impact TRANS-PP-5, YRDP construction under

Alternative 2 would not introduce road hazards, and emergency vehicle access would be maintained. Therefore, the impact would be **less than significant**.

YRDP Impact TRANS- Alt2-6: Operational Impacts on Hazards and Emergency Access

Alternative 2 YRDP operations would have the same impacts as under the Proposed Projects because non-flow YRDP operations and maintenance activities would be the same under both Alternative 2 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under TRANS-PP-6, YRDP operations under Alternative 2 would not introduce road hazards (and would likely improve safety), and emergency access would be maintained. Therefore, the impact would be **less than significant**.

Narrows Impact TRANS- Alt2-1: Operational Impacts on Transportation Plans

Narrows Project operations under Alternative 2 would have the same impacts as under the Proposed Projects because non-flow Narrows Project operations and maintenance would be the same under both Alternative 2 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under Narrows Impact TRANS-PP-1, Narrows Project operations under Alternative 2 would have **no impact** on transportation plans.

Narrows Impact TRANS- Alt2-2: Operational Impacts on CEQA Guidelines §15064.3

Narrows Project operations under Alternative 2 would have the same impacts as under the Proposed Projects because non-flow Narrows Project operations and maintenance would be the same under both Alternative 2 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under Narrows Impact TRANS-PP-2, Narrows Project operations under Alternative 2 would have **no impact** related to a conflict or inconsistency with CEQA Guidelines §15064.3, subdivision (b).

Narrows Impact TRANS- Alt2-3: Operational Impacts on Hazards and Emergency Access

Narrows Project operations under Alternative 2 would have the same impacts as under the Proposed Projects because non-flow Narrows Project operations and maintenance would be the same under both Alternative 2 and the Proposed Projects, and because changes in flows would not affect transportation resources. For the reasons described under Narrows Impact TRANS-PP-3, Narrows Project operations under Alternative 2 would have **no impact** related to hazards and emergency access.

19.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact TRANS-NP-1: Construction Impacts on Transportation Plans

The No Project Alternative would not involve the construction of any structures or supporting infrastructure, including roads, nor would it alter the existing road network. Therefore, the No Project Alternative would have **no impact** related to transportation plans resulting from construction.

YRDP Impact TRANS-NP-2: Operational Impacts on Transportation Plans

Under the No Project Alternative, Yuba Water would not operate the power generating facilities. However, it would continue its other existing YRDP operations for flood management and water supply purposes, as well as to meet flow requirements specified in agreements. YRDP operations under the No Project Alternative would continue to utilize existing facilities and roads and would not result in an increased number of vehicle trips. Therefore, YRDP operations under the No Project Alternative would have **no impact** on transportation plans.

YRDP Impact TRANS-NP-3: Construction Impacts on Consistency with CEQA Guidelines §15064.3

The No Project Alternative would not involve the construction of any structures or supporting infrastructure; therefore, no VMT generated by construction activities would occur. The No Project Alternative would have **no impact** related to consistency with CEQA Guidelines §15064.3.

YRDP Impact TRANS-NP-4: Operational Impacts on Consistency with CEQA Guidelines §15064.3

Under the No Project Alternative, Yuba Water would continue its existing YRDP operations, excluding hydropower generation, for flood management and water supply purposes, as well as to meet flow requirements specified in agreements. YRDP operations under the No Project Alternative would continue to use existing facilities and roads and would not result in an increase in VMT. Therefore, YRDP operations under the No Project Alternative would have **no impact** related to consistency with CEQA Guidelines §15064.3.

YRDP Impact TRANS-NP-5: Construction Impacts on Hazards and Emergency Access

The No Project Alternative would not involve the construction of any structures or supporting infrastructure including roads, nor would it alter the existing road network. Therefore, the No Project Alternative would have **no impact** related to hazards or emergency access.

YRDP Impact TRANS-NP-6: Operational Impacts on Hazards and Emergency Access

Under the No Project Alternative, Yuba Water would continue its existing non-hydropower YRDP operations and would continue to utilize existing facilities and roads. . Because of this, it is expected that no new traffic hazard conditions would occur, and existing emergency vehicle access would not change. Therefore, YRDP operations under the No Project Alternative would have **no impact** in relation to hazards or emergency access.

Narrows Impact TRANS-NP-1: Operational Impacts on Transportation Plans

Under the No Project Alternative, Yuba Water would continue to operate the Narrows Project facilities, excluding the power generating facilities, for flood management and water supply purposes, as well as to meet flow requirements specified in agreements. Narrows Project operations under the No Project Alternative would continue to utilize existing facilities and roads and would not result in an increase in vehicle trips. Therefore, Narrows Project operations under the No Project Alternative would have **no impact** on transportation plans.

Narrows Impact TRANS-NP-2: Operational Impacts on CEQA Guidelines §15064.3.

As noted, under the No Project Alternative, Yuba Water would continue to operate the Narrows Project facilities, excluding the power generating facilities. Narrows Project operations under the No Project Alternative would continue to utilize existing facilities and roads and would not result in an increase in VMT. Therefore, Narrows Project operations under the No Project Alternative operations would have **no impact** related to consistency with CEQA Guidelines §15064.3.

Narrows Impact TRANS-NP-3: Operational Impacts on Hazards and Emergency Access

Under the No Project Alternative, Yuba Water would continue its existing non-hydropower Narrows Project operations and would continue to utilize existing facilities and roads. Because of this, it is expected that no new traffic hazard conditions would occur, and existing emergency vehicle access would not change. Therefore, Narrows Project operations under the No Project Alternative would have **no impact** related to hazards or emergency access.

19.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)).

The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

19.6.1 Cumulative Condition

The geographical scope for cumulative traffic impact analysis can be broad, covering a county or several counties depending on the anticipated impacts. Typically, the geographic scope for potential cumulative impacts to transportation includes regional and local roadways within the project area and region. The potential for cumulative transportation impacts exists where there are multiple projects proposed in a common geographic area that have overlapping construction schedules and/or project operations that together could result in a substantial contribution to increased vehicle trips throughout the surrounding roadway network.

Table 4.9-1 in Chapter 4 lists past, present, and reasonably foreseeable projects that may contribute cumulative impacts along with the Proposed Projects and the alternatives. Some of these projects, such as Sites Reservoir and the Delta Conveyance Project, are in places that are not reasonably expected to have an impact on transportation conditions in the Project Area and vicinity. Therefore, the geographical scope of the cumulative impact analysis would be the projects that are on or in proximity to the road networks depicted in Figure 19.2-2, Figure 19.2-3, and Figure 19.2-4.

Within this geographical scope, only those projects that could affect transportation resources are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in cumulative impacts to transportation resources that also could be affected by the Proposed Projects or alternatives (see Chapter 4). These include forest thinning, water transfer and acquisition, flood control, fisheries improvement, and ecosystem restoration projects. Only a limited number of projects are considered to have the potential to cumulatively impact transportation resources and are specifically considered qualitatively in the cumulative impacts analysis for transportation resources. These include the following:

FERC Hydropower Projects in the Yuba River Watershed

- *Yuba-Bear, Upper Drum-Spaulding, and the Lower Drum Hydroelectric Projects (YB/DS Relicensings)*

Water Storage and Conveyance Projects

- *NBB Dam ARC Spillway Project (ARC Spillway Project)*

Other Local Projects in the Yuba Region

- *Camptonville Biomass Plant*
- *Pumpline Solar Project*
- *Yuba Roadside Fuel Treatment Project*
- *Pumpline Solar Project*

These projects are described in Chapter 4, and their impacts related to transportation are addressed below.

19.6.2 Cumulative Condition with Proposed Projects compared to the Existing Condition

Most of the projects listed in Table 4.9-1 are not expected to generate any significant traffic beyond that associated with construction activities. As noted, these projects include forest thinning, water storage and conveyance, water transfer and acquisition, flood control, fisheries improvement, and ecosystem restoration.

The YB/DS relicensing project has facilities similar to those of the YRDP, including recreation facilities. As with the YRDP, the recreation facilities are considered to be the main generator of traffic. The recreation facilities are in central Nevada County, and the main access to these facilities is SR 20 past Grass Valley/Nevada City. The recreation traffic would be mostly outside the regional road network depicted in Figure 19.2-2, Figure 19.2-3, and Figure 19.2-4; therefore, YB/DS recreation traffic would have a limited impact on this network. More limited traffic is associated with O&M activities. The YB/DS project proposes to build new recreation facilities

and to rehabilitate existing facilities. It also proposes a Transportation System Management Plan to ensure that project roads are adequately maintained.

The YB/DS relicensing project would have similar impacts to the Proposed Projects regarding construction projects that may affect roadways. These roadway impacts would be confined to the area where the roadwork is done, which is upstream from the YRDP facilities. These impacts would be temporary and would cease when construction work is completed.

The ARC Spillway Project is located at New Bullards Bar Dam. However, construction work would generate traffic, particularly along Marysville Road. Moreover, this project proposes to relocate a segment of Marysville Road, and traffic on Marysville Road would at times be reduced to one lane on a temporary detour around this construction. In addition, Marysville Road would be closed on occasion for blasting operations (YCWA 2023). However, as discussed in Table 4.9-1, it is anticipated that construction of the ARC Spillway would occur in advance of other YRDP relicensing-related construction activities, which would not be initiated until after FERC issues a new license.

The Camptonville Biomass Plant would be the only other project anticipated to generate traffic. This traffic would involve trucks delivering woody material and employee vehicles. The Yuba Roadside Fuel Treatment Project may have a temporary effect on traffic flow on the roads adjacent to which project activities would occur, but this effect would cease once work is completed. The Camptonville Biomass Plant may lead to an increase in local truck traffic in the Camptonville area, mostly on SR 49. As described in Table 4.9-1, this project would have the capacity to process 40,000 tons of woody material per year. The type of trucks that would be used to haul this material is not known, nor whether the material would be chipped or unchipped. According to one source, a traditional truck-trailer with a capacity of 100 cubic yards can carry approximately 21.5 tons of dry chipped material (Thompson et al. 2012). If this is applied to the capacity of the proposed plant, this would indicate that approximately 1,860 trucks would be required, with a total of 3,720 trips assuming a round trip for each truck. Based on the LOS D threshold established by Yuba County and the current traffic volume on SR 49 near Camptonville (1,250), the total traffic volume on SR 49 with the Camptonville project would be 4,970, which is well below the maximum LOS D threshold of 12,400 for a Conventional Highway – 2 Lanes (Rolling Terrain). It is not known what the average trip length would be for each truck, so VMT from this project cannot be precisely calculated.

All other projects would have no traffic impacts beyond construction activities. The Yuba Roadside Fuel Treatment Project, as noted, may have minor traffic flow impacts in the area where work is being conducted. However, these impacts would cease when work is completed, and no additional transportation impacts are anticipated. The Pumpline Solar Project would generate construction traffic, but after work is completed, traffic would be limited to visitors performing routine maintenance and repairs if necessary. The Pumpline Solar Project construction traffic would most likely affect SR 20. However, since the project proposes to install solar energy that would supplement the cost of lifting Yuba River water to the head of the Pumpline Canal, the solar infrastructure required would not likely be extensive, and traffic associated with this installation would likely be limited. After completion, the project would require only occasional visits by maintenance workers.

As explained above, the Proposed Narrows Project would not result in any transportation impacts that could contribute to a cumulative transportation impact. The Proposed YRDP Project would have less than significant impacts related to transportation plans and hazards and emergency access, but would have a significant and unavoidable impact due to the increase in VMT during construction and operations.

For the reasons above, the Proposed Projects, in combination with related past, present, and future projects, would likely not result in a significant cumulative impact related to transportation plans or hazards and emergency access. However, the increases in VMT from the Proposed YRDP Project and other projects, including the YB/DS project and the Camptonville Biomass Plant would likely be significant. Accordingly, under the Cumulative Condition, including the Proposed Projects, the cumulative impact to transportation relative to the Existing Condition would be significant.

YRDP Cumulative Impact TRANS-PP-1: Potential for significant cumulative transportation impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative transportation impact would be significant due to the cumulative increase in VMT. As explained above under YRDP Impacts TRANS-PP-3 and TRANS-PP-4, the Proposed YRDP Project would generate an increase in VMT during both construction and operations, particularly of its recreation facilities. Based on the no-net VMT threshold utilized for this analysis, the Proposed YRDP Project's increase in VMT is a cumulatively considerable incremental contribution to the significant cumulative impact. As explained above, no mitigation is available. Accordingly, the Proposed YRDP Project would result in a **significant and unavoidable cumulative impact** to transportation.

Narrows Cumulative Impact TRANS-PP-1: Potential for significant cumulative transportation resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative transportation impact would be significant due to the cumulative increase in VMT. However, as explained above under Narrows Impacts TRANS-PP-1, TRANS-PP-2, and TRANS-PP-3, the Proposed Narrows Project would not result in any impacts to transportation that would contribute to a cumulative impact. Accordingly, the Proposed Narrows Project would not have a cumulatively considerable incremental contribution to the significant cumulative impact. Therefore, the Proposed Narrows Project would have **no cumulative impact** to transportation.

19.6.3 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on transportation are listed in Section 19.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be the same as the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 19.6.2 above. Alternative 1 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 1

and the Proposed Projects include differences in flow-based operations, those differences do not materially affect transportation considerations in the analysis and conclusions in Section 19.6.2. For the same reasons explained in Section 19.6.2 above, the Cumulative Condition, including Alternative 1, would have a significant cumulative impact to transportation relative to the Existing Condition.

YRDP Cumulative Impact TRANS-Alt1-1: Potential for significant cumulative transportation impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative transportation impact would be significant due to the cumulative increase in VMT. As explained above under YRDP Impacts TRANS-Alt1-3 and TRANS-Alt1-4, Alternative 1 would generate an increase in VMT from YRDP construction and operations, particularly of its recreation facilities. Based on the no-net VMT threshold utilized for this analysis, the increase in VMT from YRDP construction and operations under Alternative 1 is a cumulatively considerable incremental contribution to the significant cumulative impact. As explained above, no mitigation is available. Accordingly, YRDP construction and operations under Alternative 1 would result in a **significant and unavoidable cumulative impact** to transportation.

Narrows Cumulative Impact TRANS-Alt1-1: Potential for significant cumulative transportation impacts resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative transportation impact would be significant due to the cumulative increase in VMT. However, as explained above under Narrows Impacts TRANS-Alt1-1, TRANS-Alt1-2, and TRANS-Alt1-3, Narrows Project operations under Alternative 1 would not result in any impacts to transportation that would contribute to a cumulative impact. Accordingly, Narrows Project operations under Alternative 1 would not have a cumulatively considerable incremental contribution to the significant cumulative impact. Therefore, Narrows Project operations under Alternative 1 would have **no cumulative impact** to transportation.

19.6.4 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on transportation are listed in Section 19.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be the same as the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 19.6.2 above. Alternative 2 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include differences in flow-based operations, those differences do not materially affect transportation considerations in the analysis and conclusions in Section 19.6.2. For the same reasons explained in Section 19.6.2 above, the Cumulative Condition, including Alternative 2, would have a significant cumulative impact to transportation relative to the Existing Condition.

YRDP Cumulative Impact TRANS-Alt2-1: Potential for significant cumulative transportation impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative transportation impact would be significant due to the cumulative increase in VMT. As explained above under YRDP Impacts TRANS-Alt2-3 and TRANS-Alt2-4, Alternative 2 would generate an increase in VMT from YRDP construction and operations, particularly of its recreation facilities. Based on the no-net VMT threshold utilized for this analysis, the increase in VMT from YRDP construction and operations under Alternative 2 is a cumulatively considerable incremental contribution to the significant cumulative impact. As explained above, no mitigation is available. Accordingly, YRDP construction and operations under Alternative 2 would result in a **significant and unavoidable cumulative impact** to transportation.

Narrows Cumulative Impact TRANS-Alt2-1: Potential for significant cumulative transportation impacts resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative transportation impact would be significant due to the cumulative increase in VMT. However, as explained above under Narrows Impacts TRANS-Alt2-1, TRANS-Alt2-2, and TRANS-Alt2-3, Narrows Project operations under Alternative 2 would not result in any impacts to transportation that would contribute to a cumulative impact. Accordingly, Narrows Project operations under Alternative 2 would not have a cumulatively considerable incremental contribution to the significant cumulative impact. Therefore, Narrows Project operations under Alternative 2 would have **no cumulative impact** to transportation.

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CHAPTER 20

NOISE

20.1 Introduction

This chapter describes the environmental setting and regulatory framework for noise, and it identifies direct, indirect, and cumulative impacts of the Proposed Projects and Alternatives during construction and O&M. The analysis focuses on the noise environment and the impacts related to this environment as a result of construction and operations. The study area for noise refers to the areas within and directly adjacent to the Project Area.

20.2 Environmental Setting

20.2.1 Ambient Noise

Noise can be described as unwanted sound – sound that is loud, disagreeable, or unexpected. Consequently, the perception of noise is subjective in nature and can vary from person to person. The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. Excessive and chronic exposure to elevated sound levels can result in adverse auditory and non-auditory effects on humans. Auditory effects are those related to temporary or permanent hearing loss. Non-auditory effects are those related to behavioral and physiological effects, associated primarily with annoyance, nuisance, and dissatisfaction that lead to interference with such activities as communication, sleep, and learning.

Sound levels usually are measured and expressed in decibels (dB), with 0 dB being the lowest threshold of hearing. Decibel levels range from 0 to 140: 50 dB for light traffic is considered a low decibel level, whereas 120 dB for a jet takeoff at 200 feet is considered a high decibel level. The perceived loudness of sounds depends on many factors, including sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable and can be approximated through frequency filtering using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels – in decibels expressed as dBA – and community response to noise. For this reason, the dBA sound level has become the standard descriptor for environmental noise assessments.

The focus of analysis of noise impacts is on the ambient noise level, which is the all-encompassing noise level associated with a given noise environment. The intensity of environmental noise fluctuates over time; as such, several different descriptors of time-averaged noise levels have been developed. One common noise descriptor is the Equivalent Noise Level (L_{eq}), which averages noise over a specific period of time, typically one day. The L_{eq} is the basis for other commonly used noise descriptors:

- The Day-Night Average Level (L_{dn}), which takes the L_{eq} and applies a 10-dBA weighting to sound that occurs from 10:00 p.m. to 7:00 a.m., on the assumption that sound during this time period is more likely to be considered disturbing.
- The Community Noise Equivalent Level (CNEL), which like the L_{dn} applies a 10-dBA weighting to sound that occurs from 10:00 p.m. to 7:00 a.m., but also applies a 5-dBA weighting to sound occurring from 7:00 p.m. to 10:00 p.m.

The Project Area is mostly rural, with recreational and other land uses associated with the reservoirs. The primary existing noise sources near the Project Area include vehicular traffic, with low amounts of noise from adjacent residential and recreational activities, including boating. The noise level generated by traffic on SR 49 from the Nevada County line to the Sierra County line was approximately 60 dB L_{dn} at 100 feet from centerline. On the segment of Marysville Road from Oregon House Road to SR 49, the traffic noise level was approximately 55 dBA at 100 feet from centerline (Yuba County 2011a).

Land uses defined by Federal, State, and local regulations as "noise-sensitive" vary slightly, but they typically include schools, hospitals, rest homes, places of worship, long-term care facilities, mental care facilities, residences, convalescent homes, hotels, certain parks, and similar land uses. The Caltrans Technical Noise Supplement defines a noise receiver or receptor as "any natural or artificial sensor that can perceive, register, or be affected by sound, such as a human ear, or a microphone" (Caltrans 2013).

The nearest noise-sensitive receptors to the Project Area are a residence located approximately 0.6-miles northeast of the New Bullards Bar Dam, and scattered residences approximately 0.55 miles southwest of the Hornswoggle Campground. Noise generated by construction activities would also be heard by employees and recreational visitors at the Emerald Cove Marina (YCWA 2023). The marina is approximately two miles from the nearest proposed activity – improvement of the Schoolground Campground. The existing campgrounds at New Bullards Bar Reservoir are potential noise-sensitive receptors. These are the closest receptors; no other receptors were identified within one-half mile of any other Proposed Projects development, including at the Log Cabin and Our House Diversion Dams.

20.2.2 Ground-borne Vibrations

Ground-borne vibration is energy transmitted in waves through the ground. Sources of vibration include natural phenomena, such as earthquakes, and human activities such as explosions, machinery, traffic, trains, and construction equipment. Although vibration effects may be imperceptible at lower levels, they may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the highest levels of vibration, damage to structures is primarily architectural and rarely results in damage to structural components (Yuba County 2011a).

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or in root-mean-square velocity (RMS). Both are normally described in inches per second, although vibration decibels (VdB) are also used for RMS measurements. PPV is typically used in monitoring transient and impact vibration and is an appropriate metric to evaluate potential building damage. RMS is

used to evaluate vibration impacts on humans (Yuba County 2011a). Vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source (YCWA 2023).

The Project Area is mostly rural, with few activities that generate substantial ground-borne vibrations. Therefore, land uses in the area are not frequently subject to high vibration levels. The primary existing vibration source in the Project Area is periodic heavy truck traffic along Marysville Road. Ground-borne vibrations also have been associated with periodic flood control releases through the New Bullards Bar Dam spillway and the raising and lowering of gates. Ground-borne vibration and ground-borne noise levels generated from O&M activities would be less than what is expected to be generated during construction due to the lack of heavy equipment needs during O&M (YCWA 2023).

20.3 Regulatory Setting

20.3.1 Federal

20.3.1.1 United States Environmental Protection Agency

The EPA, Office of Noise Abatement and Control, was established to coordinate Federal noise control activities. The Office of Noise Abatement and Control established guidelines in response to the Federal Noise Control Act of 1972 to identify and address the effects of noise on public health and welfare, and the environment. EPA has issued recommended guidelines for noise levels considered safe for community exposure. The yearly average L_{eq} for a person seeking to avoid hearing loss over his or her lifetime should not exceed 70 dB. To minimize interference and annoyance, noise levels should not exceed 55 dB L_{dn} in outdoor activity areas and 45 dB L_{dn} in residential structures (EPA 1974).

20.3.1.2 Federal Transit Administration

The Federal Transit Administration (FTA) has developed guidelines for assessing the significance of vibration produced by transportation sources and construction activity. To address annoyance engendered by ground-borne vibration, FTA has established maximum-acceptable vibration thresholds for different land uses. These guidelines recommend 72 VdB for residential uses and buildings where people normally sleep when the source of vibrations is frequent in nature (FTA 2006).

FTA guidelines also provide criteria for ground-borne vibration effects with respect to building damage during construction activities (FTA 2006). According to FTA guidelines, a vibration-damage criterion of 0.50 in/sec PPV should be considered for reinforced-concrete, steel, or timber - materials present at the existing New Bullards Bar Dam, primary spillway, and associated facilities (YCWA 2023).

20.3.2 State

20.3.2.1 California Department of Transportation

The California Department of Transportation (Caltrans) has recently updated a guidance manual on ground-borne vibrations, which includes standards for acceptable vibration levels generated by transportation and construction projects. These standards are more stringent than the FTA standards and are intended to protect fragile, historic, and residential structures. Caltrans recommends for highway construction analysis the following thresholds of exposure to continuous/frequent intermittent vibration sources (Caltrans 2020):

- 0.5 inches per second PPV for new residential structures,
- 0.3 inches per second PPV for older residential structures,
- 0.25 inches per second PPV for historic and some old buildings,
- 0.1 inches per second PPV for fragile buildings, and
- 0.08 inches per second PPV for extremely fragile historic buildings, ruins, and ancient monuments.

20.3.3 Regional/Local

20.3.3.2 Yuba County Code

Chapter 8.20 - Noise Regulations

Yuba County Code Chapter 8.20 sets forth regulations and standards aimed at controlling unnecessary, excessive, and annoying noise in unincorporated Yuba County. A goal of the noise regulations is to maintain quiet in those areas that exhibit low noise levels. Another goal is to implement programs aimed at reducing noise in those areas within Yuba County where noise levels are above acceptable limits.

Chapter 8.20 provides regulations that establish the required ambient noise levels and the maximum allowable noise levels, based on the land use and time of day. Where the ambient noise level is less than designated in this chapter, the maximum noise level permitted shall govern. Several land uses and their respective allowable noise levels are identified. The portion of the Project Area within Yuba County is zoned as Resource Preservation and Recreation (see Chapter 22, Land Use and Planning). The County Code does not establish an ambient noise level or a maximum noise level for this zone.

Chapter 8.20 also identifies exemptions from the noise regulations. Section 8.20.310 states that it shall be unlawful for any person within a residential zone, or within a radius of 500 feet therefrom, to operate equipment or perform any outside construction or repair work on buildings, structures, or projects or to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device between the hours of 10:00 p.m. of one day and 7:00 a.m. of the following day in such a manner that a reasonable person of normal sensitiveness residing in

the area is caused discomfort or annoyance, unless a permit has been duly obtained beforehand from the Director of the Planning and Building Services Department.

Section 11.26.060 - Vibration

County Code § 11.26.060 states that no vibration shall be produced that is transmitted through the ground and is discernible without the aid of instruments by a reasonable person at the property lines of the site. Vibrations from temporary construction, demolition, and vehicles that enter and leave the subject parcel (e.g., construction equipment, trains, trucks, etc.) are exempt from this standard.

20.3.3.3 Yuba County General Plan

The Public Health and Safety Element of the Yuba County General Plan sets forth goals and policies concerning noise. Of relevance to the Proposed Projects is Policy HS 10.3, which states that new developments that would generate or be affected by non-transportation noise shall be located, designed, and, if necessary, mitigated below maximum levels specified in Table 3.13-3 of the General Plan, as measured at outdoor activity areas of affected noise-sensitive land uses. Table 20.3-1 replicates General Plan Table 3.13-3. The Yuba County General Plan defines noise- and vibration-sensitive uses as including residences; schools; hospitals; rest homes; long-term medical or mental care facilities; and similar uses. Yuba County Code § 11.26.050 states that no use or activity shall create ambient noise levels that exceed the standards established in the Public Health and Safety Element of the Yuba County General Plan.

Table 20.3-1. Maximum Allowable Noise Exposure from Non-transportation Noise Sources at Noise-sensitive Land Uses, Yuba County.

Noise Level Descriptor	Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
Hourly L_{eq}	60 dBA	45 dBA
L_{max}	75 dBA	65 dBA

Notes: dBA = A-weighted decibels; L_{eq} = energy-equivalent noise level; L_{max} = maximum noise level. Each of the noise levels specified shall be lowered by 5 dBA for simple tone noises, noises consisting primarily of speech, music, or for recurring impulsive noises. These noise-level standards do not apply to residential units established in conjunction with industrial or commercial use (e.g., caretaker dwellings). Noise-sensitive land uses include schools, hospitals, rest homes, long-term care facilities, mental care facilities, residences, and other similar land uses.
Source: Yuba County 2011b.

20.3.3.4 Nevada County Code

Nevada County Code § 12.04.070 sets forth the noise regulations, the purpose of which is to ensure that future development minimizes unnecessary and annoying noise by establishing maximum noise levels and standards for evaluating potential noise impacts. The section includes a table that sets exterior noise limits based on land use and time periods. For Rural areas, which encompass all Proposed Projects lands in Nevada County, the L_{eq} is 55 dBA and the L_{max} (i.e., maximum noise level) is 75 dBA from 7:00 a.m. to 7:00 p.m. From 7:00 p.m. to 10:00 p.m., the L_{eq} and the L_{max} are 50 dBA and 65 dBA, respectively. From 10:00 p.m. to 7:00 a.m., the L_{eq} and the L_{max} are 40 dBA and 55 dBA, respectively. Section 12.04.070 further states that the above standards shall not apply to those activities associated with the actual construction of a project or to those projects associated with the provision of emergency services or functions.

20.3.3.5 Sierra County

The Noise Element of the Sierra County General Plan contains Policy 13, which requires proposed non-residential land uses to conduct an acoustic analysis if they are likely to produce noise levels exceeding the performance standards set forth in Noise Element Table 7-4 at existing or planned noise-sensitive uses (Sierra County 2012). However, the YRDP facilities in the County are not a land use that is identified in Table 7-4. In addition, this policy has not been codified in the Sierra County Code.

20.4 Impact Assessment Methodology

The impact analysis for noise follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. A resource-specific methodology, described below, is used to supplement the analysis conducted by FERC. The geographical scope of the impact analysis on noise is the area within and adjacent to the Project Area.

20.4.1 Construction

The primary potential for the noise impacts would be related to construction equipment and construction-related vehicle traffic. A desktop analysis was completed to collect and analyze data related to construction and traffic noise in the Project Area. Information related to noise was collected using the Yuba County 2030 General Plan and Draft Environmental Impact Report and the ARC Spillway EIR. Both documents contain information on existing noise conditions in the Project Area. In addition, the Yuba County General Plan contains noise exposure standards by which construction noise impacts can be assessed. The ARC Spillway EIR contains information regarding noise levels generated by construction equipment, including from the Federal Highway Administration.

As noted, County Code § 11.26.060 states that vibrations from temporary construction, demolition, and vehicles that enter and leave the subject parcel (e.g., construction equipment, trains, trucks, etc.) are exempt from any County standards. As such, Yuba County has no significance thresholds for construction vibrations. To evaluate the potential significance of construction vibrations, this analysis uses the Caltrans vibration standards, described in the Regulatory Setting above.

There would be no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

20.4.2 Operations

A desktop analysis was completed to collect and analyze data related to noise in the Project Area. For the purposes of this analysis, information related to noise was collected using the following sources:

- Yuba County 2030 General Plan and Draft Environmental Impact Report
- Nevada County General Plan

- Sierra County General Plan
- ARC Spillway DEIR

As noted above, the Yuba County General Plan and ARC Spillway EIR contains noise information that can be applied to the analysis. Yuba and Nevada Counties have allowable exposure standards to noise generated by non-transportation sources. These standards will be applied where appropriate in the analysis. Sierra County does not have identifiable standards, so the Appendix G significance thresholds will be applied to noise impacts that occur in Sierra County.

The Yuba County General Plan EIR also contains information on existing traffic noise conditions. The ARC Spillway EIR provides background information on noise and vibration in the area.

The Proposed Projects propose improvements to recreation facilities, including the addition of campsites. Information from Chapter 11, Recreation, of this EIR was used, where applicable, in evaluating the potential impacts of these improvements as they relate to noise. Since the Proposed Projects consist substantially of infrastructure improvements, other noise impacts corresponding to operations would consist mainly of occasional visits by maintenance or repair vehicles, which would not be expected to be different from current conditions. Therefore, these impacts are not considered in detail in this analysis.

20.4.3 Impact Indicators and Significance Criteria

For noise, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on noise if it would result in:

- **Impact NOISE-1:** Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **Impact NOISE-2:** Generation of excessive ground-borne vibration or ground-borne noise levels.
- **Impact NOISE-3:** For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

As discussed in Chapter 17, Hazards and Hazardous Materials, there are no public or public use airports within two miles of the Project Area. No private airstrips have been identified in the Projects Vicinity. Therefore, the Proposed Projects would have no impact related to airport or airstrip noise, and the issue will not be further discussed in this chapter.

20.5 Environmental Impact Analysis

20.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact NOISE-PP-1: Construction Impacts on Ambient Noise

During YRDP construction, the use of equipment like diesel-powered vehicles, gasoline-powered tools, and other machinery would generate noise. Noise also could be generated by traffic associated with construction, such as delivery trucks and employee vehicles. Specific construction equipment and timeframes associated with YRDP construction are described in Chapter 2, Project Description, and in Appendices 2A-3 (non-recreation facilities) and 2B-14 (recreation facilities). The most active time periods for YRDP construction, which in turn would likely generate significant noise, are:

- Year One after issuance of new licenses – New Colgate TDS, Sunset Vista Observation Site, New Colgate Powerhouse River Access, Cottage Creek Campground and Picnic Site, Dark Day Picnic Site and Campground, West Shoreline Trail (Phase 1), rehabilitation of existing water delivery system.
- Year Two after issuance of new licenses - Sunset Vista Observation Site, New Colgate Powerhouse River Access, Cottage Creek Campground and Picnic Site, Dark Day Picnic Site and Campground, West Shoreline Trail (Phase 1), rehabilitation of existing water delivery system.
- Years Four and Five after issuance of new licenses – Our House and Log Cabin Diversion Dam improvements, Shadow Ridge Campground and Trails, Hornswoggle Group Campground, Moran Road Boating Site, West Shoreline Trail (Phase 1)

The construction timelines presented above coincide with the schedule used in the air quality analysis for this DEIR (see Chapter 15, Air Quality and Greenhouse Gas Emissions). Scheduled construction activities would be reduced beyond Year Five from the issuance of the new licenses. Activities from that point on would be confined to rehabilitation of and improvements to currently existing recreation facilites, except for construction of the new Kelly Ridge Campground.

Construction equipment would be a main contributor to noise. Table 20.5-1 shows typical noise levels generated 50 feet from equipment potentially associated with YRDP construction.

Table 20.5-1. Construction Equipment and Typical Equipment Noise Levels.

Type of Equipment	Noise Levels (dBA) L_{max} at 50 Feet
Equipment/Supply Transport Trucks	80
Front-end Loader	79
Excavator	81
Crane	81
Blade	85
Bulldozer	85
Highway Dump Truck	76
Water Truck	N/A
Roller	80
Forklift	N/A
Rock Drill	85
Man Lift	75
Vacuum Truck	82

Table 20.5-1. (Continued).

Type of Equipment	Noise Levels (dBA) L_{max} at 50 Feet
Concrete Pickup Truck	81
Pickup Truck	75

Note: L_{max} = maximum instantaneous sound level; dBA = decibels, A-weighted
Source: Federal Highway Administration 2006, adapted in YCWA 2023.

People who would be most disturbed by construction noise are recreation visitors. Recreational river boating would not be affected because flows are not within the boatable range during the late summer months when the construction would occur (FERC 2019). As noted, the nearest noise-sensitive receptors to the YRDP Area are residences and the Emerald Cove Marina. The Emerald Cove marina would be the closest to the proposed construction activities under the Proposed Projects, mainly the New Colgate TDS. The residences are closest to the proposed campground improvements and development, as are the existing campgrounds. Since the nearest sensitive receptors are all located in Yuba County, the noise exposure standards of Yuba County are used to determine the significance of the noise exposure experienced by these receptors.

It is an accepted rule of noise propagation that noise levels decrease by 6 dBA for every doubling of distance from a noise source (Harris 1991). The loudest construction equipment that can conceivably be used by YRDP construction would be blades, bulldozers, and rock drills, each of which generates a noise level of approximately 85 dBA at a distance of 50 feet (see Table 20.5.1 above).

The closest noise-sensitive receptors to YRDP construction activities would be the existing campgrounds, as construction work would occur on and near them. Assuming that construction work may occur during the time the campgrounds are open, users of these campgrounds would likely be exposed to elevated levels of noise from construction if the campgrounds were in use. These levels would likely exceed the noise exposure standards of Yuba County. As discussed below, some construction work could potentially occur during the time the campgrounds are open for use.

The residences southwest of the Hornswoggle Campground would be the next closest receptors, approximately 0.55 miles from the campground. Based on the loudest construction equipment noise level of 85 dBA and a distance of approximately 0.55 miles (2,904 feet), and with interpolation, it is expected that construction noise would decrease by approximately 35 dBA. This would lead to a noise exposure of 50 dBA, which would be below the maximum 60-dBA daytime exposure allowed by the Yuba County General Plan (see Table 20.3.1). However, it is likely that more than one piece of equipment would be used during construction at the Hornswoggle Campground, and the equipment to be used work has not been specified. Because of this, the potential noise impacts of construction noise at the Hornswoggle Campground, including the potential effects of simultaneous use of construction equipment, cannot be precisely determined, but could be potentially significant.

As noted in its *Recreation Facilities Plan*, Yuba Water will aim to complete as much work as possible during periods when the recreation facilities are normally closed, from October 15 to April 15 (see Table 2.4-3 in Chapter 2, Project Description). However, Yuba Water expects that some work will require closing the facilities during the typical open season to complete all the proposed work. If construction takes longer than one year, and is not overly disruptive, Yuba Water will consider reconstructing individual campground loops separately, if the construction activity

would unduly reduce the capacity of the area during a facility's open season. However, this would lead to the potential exposure of facility users to construction noise that may exceed Yuba County noise standards.

The implementation of Yuba Water's proposed *Recreation Facilities Plan* would minimize effects of construction activities noise on recreation facilities. In particular, as discussed in Chapter 2, Project Description, the *Recreation Facilities Plan* has a detailed implementation schedule extending from License Year 1 through 20, thereby spreading out the construction work. As noted, it is expected that work at these facilities would occur outside open season, and some facilities may be closed during open season, so no users would be on the facilities site during construction work.

Mitigation measures MM NOISE-1 and MM NOISE-2, set forth below, would be applied to YRDP construction work. These measures would place conditions on construction equipment operations and use that would minimize exposure of nearby sensitive receptors to construction noise, as well as require notification to potential sensitive receptors as to when construction activities may occur.

Construction noise impacts would be temporary and would cease with completion of YRDP work. Mitigation measures and other actions, such as implementation of the *Recreation Facilities Plan* schedule, would reduce potential noise exposure by sensitive receptors, particularly residences, to acceptable levels. Therefore, YRDP construction impacts related to noise would be **less than significant with mitigation incorporated**.

Mitigation Measures

MM NOISE-1. Yuba Water will require its primary contractor(s) for engineering design and construction to implement the following measures to avoid and minimize construction noise effects on sensitive receptors. Measures that will be used to limit noise will include, but not be limited to, the measures listed below.

- No construction will be performed within 1,000 feet of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 10:00 p.m. and 7:00 a.m. on other days without the approval of the Yuba Water construction project manager.
- All equipment used will have sound-control devices no less effective than those provided on the original equipment. No equipment will have unmuffled exhaust. All equipment will comply with pertinent equipment EPA noise standards.
- All construction activities shall not exceed the maximum noise standards set forth in the Yuba County General Plan for non-transportation noise sources at noise-sensitive land uses, as required by Yuba County Code § 11.26.050. This shall also include any recreation facilities open in the area during any construction work in the open season (April 15 – October 15), The contractor shall implement any noise-reduction measures to achieve the Yuba County General Plan standards, including but not limited to noise barriers and use of electric equipment. These measures shall be incorporated within final construction specifications. These measures need not be applied during the time the recreation facilities are regularly closed, or if the contractor can demonstrate that non-recreation noise-sensitive

land uses would not be exposed to noise levels exceeding Yuba County General Plan standards.

- Construction and haul routes will be planned to minimize construction and traffic during nighttime hours, and route haul traffic away from residential receptors to the extent feasible and practicable.
- A disturbance coordinator will be designated. The disturbance coordinator's phone number will be conspicuously posted around the construction site, in adjacent public spaces, and in construction notifications. The disturbance coordinator will be responsible for responding to any complaints about construction activities. The disturbance coordinator will receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implement any feasible measures to alleviate the complaint. The disturbance coordinator will have the authority to halt noise-generating activity, if necessary and feasible, to protect public health.

MM NOISE-2. The following measures will be implemented to notify nearby residences and recreationists of construction work activities:

- Signage will be posted at the Emerald Cove Marina and nearby recreation areas such as the Yuba Rim Trail, New Bullards Bar Trail, Cottage Creek boat launch, and the Dark Day boat launch notifying people that excessive noise generation from construction activities will occur at times.
- Prior to implementing any nighttime (10:00 p.m. – 7:00 a.m.) construction work that is approved by the Yuba Water construction project manager per Mitigation Measure MM-NOISE-1, residences within a 0.75-mile radius of the construction site will be notified in writing (email or letter) at least 48 hours in advance of any potential or planned nighttime construction work with the estimated schedule (dates) for such nighttime work. In addition, the same notification of potential nighttime construction work will be posted at the Emerald Cove Marina.

YRDP Impact NOISE-PP-2: Operational Impacts on Ambient Noise

It is expected that operations of Yuba Water facilities under the YRDP would not substantially increase ambient noise in the area. The proposed New Colgate TDS would be installed within the powerhouse, so any noise outside the powerhouse would not change. The powerhouse is set within the Yuba River Canyon, and a search of Google Earth does not indicate any potentially noise-sensitive land uses within at least one-half mile of the facility.

The Lohman Ridge Diversion Tunnel is an underground facility, with the only aboveground facilities being the outlets at the Log Cabin and Our House Diversion Dams. Because of this, changes in tunnel operations would have no impact on noise. As noted in the Project Description, Yuba Water anticipates that the new low-level outlets at Log Cabin and Our House Diversion Dams would only be used to provide for controlled releases from the dams in excess of the existing fish release valves. As such, noise from these releases would be comparable to existing operations. It should be noted that both diversion dams are within canyons, and a search of Google Earth found no potential noise-sensitive land uses within one-half mile of either facility.

Improved and additional recreation facilities would accommodate more visitors. As noted in Chapter 11, Recreation, the demand for recreation within the YRDP boundary is estimated to increase by 51 percent from 2012 to 2050. While this increased demand would likely lead to an increase in the ambient noise at these facilities, mainly by traffic, it is not driven by or linked to the proposed recreation facility improvements or operation associated with the license. As discussed in more detail in Chapter 19, Transportation, the maximum daily traffic that could be generated by the proposed recreation facilities upon completion would be approximately 917 vehicles, including 331 vehicles from the new facilities. This traffic would be seasonal, as most facilities would be closed generally between mid-autumn and mid-spring, and it is expected that any maximum traffic would be generated mainly on weekends and holidays. Because the traffic would be limited, noise impacts from traffic would likewise be limited. In addition, there are very few noise-sensitive land uses in the vicinity of the recreation facilities, and the areas surrounding the facilities are thickly forested, which would provide some noise screening; therefore, operational activities would not result in any exceedances of standards.

In summary, the impacts of YRDP operations related to ambient noise would be **less than significant**. No CEQA mitigation is required.

YRDP Impact NOISE-PP-3: Construction Impacts on Ground-borne Vibration

YRDP construction may generate ground-borne vibrations, mainly from the use of construction equipment and traffic of heavy-duty trucks. As noted in the Regulatory Setting, Yuba County Code §11.26.060 exempts temporary construction activities from the County's vibration standards. As explained in the ARC Spillway EIR, Yuba Water previously analyzed vibration levels from three pieces of construction equipment (a large bulldozer, a small bulldozer, and loaded trucks) at the marina 0.3 miles away from the ARC Spillway construction site. That analysis demonstrated that the predicted vibration levels would not be greater than 0.001-inch per second PPV (YCWA 2023). This would be less than the Caltrans threshold of 0.3-inch per second PPV for older residential structures noted in the Regulatory Setting.

As discussed in Chapter 16, Geology and Soils, like the ARC Spillway site, the underlying geology of the Proposed YRDP project construction is igneous in composition, and soil composition does not vary substantially. In addition, sensitive receptors to vibrations in the YRDP Area would be residences – recreation facilities would not be as sensitive. The nearest residences would be at least 0.55-miles away, and most would be farther away. It is anticipated that bulldozers would be used for YRDP construction activities. As with ARC Spillway construction, vibrations from construction under the Proposed YRDP Project would not be expected to be greater than 0.001-inch per second PPV at the nearest residences, and would likely be less given their greater distance. This would be below the Caltrans standard of 0.3-inch per second PPV for older residential buildings. YRDP construction would have a ground-borne vibration impact that is considered **less than significant**. No CEQA mitigation is required.

YRDP Impact NOISE-PP-4: Operational Impacts on Ground-borne Vibration

Ground-borne vibration and noise levels generated from O&M activities would be less than what is expected to be generated during construction due to the lack of heavy equipment needs during O&M. As noted, flood control operations at New Bullards Bar Dam are a potential source of

ground-borne vibrations, with the raising and lowering of gates. As such, vibrations from these operations would occur intermittently (YCWA 2023). As discussed in Chapter 5, Surface Water Resources, flood control operations at New Bullards Bar Dam would continue to be governed by the USACE WCM, Therefore, vibration levels from flood control operations at New Bullards Bar Dam are not expected to significantly change from the Existing Condition.

Changes in flow due to new license conditions may lead to additional gate activity at New Bullards Bar Dam. As described in Chapter 5, Surface Water Resources, releases at New Bullards Bar Dam are made from its base. The only condition under which flows would be made from the spillway would be if additional releases beyond the capacity of the New Colgate Powerhouse and Minimum Flow Powerhouse were needed to meet the USACE WCM storage restrictions. As noted above, the YRDP would continue to operate according to the USACE WCM. Therefore, there would not be a significant change in vibration levels from YRDP operations from the Existing Condition due to changes in flows.

Traffic generated by YRDP hydropower and flood control operations would be limited to occasional visits by maintenance and repair vehicles; heavy-duty vehicle use would be limited to repair work, which is expected to be infrequent. As noted, the proposed recreational facilities would likely increase traffic on local roads, up to a maximum of 917 vehicles. This traffic would be seasonal, and the traffic fleet mix would not include heavy-duty vehicles that could potentially generate vibrations.

As discussed in the Regulatory Setting, Yuba County Code § 11.26.060 states that no vibration shall be produced that is transmitted through the ground and is discernible without the aid of instruments by a reasonable person at the property lines of the site. As noted, the Yuba County General Plan defines noise- and vibration-sensitive uses as including residences; schools; hospitals; rest homes; long-term medical or mental care facilities; and similar uses. No such uses have been identified along the property lines of the YRDP facilities. Proposed YRDP operations would not generate any vibrations that would be felt by sensitive land uses in a manner contrary to County Code § 11.26.060. Therefore, YRDP operations would have a **less than significant** impact related to ground-borne vibrations. No CEQA mitigation is required.

Narrows Impact NOISE-PP-1: Operational Impacts on Ambient Noise

Operations of the Narrows Projects facilities would remain largely unchanged under the Proposed Projects, and no recreation facilities either exist or are proposed. Therefore, Proposed Narrows Project operations would have **no impact** related to ambient noise, and no CEQA mitigation is required.

Narrows Impact NOISE-PP-2: Operational Impacts on Ground-borne Vibration

Proposed Narrows Project operations would not change substantially from the Existing Condition. In addition, no land uses sensitive to vibrations, such as residences, are located near the Narrows Project facilities. As such, Narrows Project operations would have **no impact** related to ground-borne vibrations. No CEQA mitigation is required.

20.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact NOISE-Alt1-1: Construction Impacts on Ambient Noise

Alternative 1 would involve the same construction activities as the proposed YRDP, so it would generate the same associated ambient noise impacts described under YRDP Impact NOISE-PP-1. This increased noise would cease once construction is complete. Alternative 1 YRDP construction impacts on noise would be potentially significant, However, feasible mitigation measures such as MM NOISE-1 and MM NOISE-2 can be adopted to reduce the impacts to a level that would be less than significant. Therefore, Alternative 1 YRDP construction impacts related to noise would be **less than significant with mitigation incorporated.**

YRDP Impact NOISE-Alt1-2: Operational Impacts on Ambient Noise

Alternative 1 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. Like the proposed YRDP, operational noise under Alternative 1 would consist of vehicular traffic related to continuation of the existing operation, maintenance, and inspection activities as well as an increase in visitors due to the recreational improvements. For the same reasons discussed under YRDP Impact NOISE-PP-2, the YRDP O&M activities and recreation vehicle traffic under Alternative 1 are not expected to generate an increase in ambient noise in exceedance of existing standards. Therefore, Alternative 1 YRDP operations would have a **less than significant** impact associated with ambient noise.

YRDP Impact NOISE-Alt1-3: Construction Impacts on Ground-borne Vibration

Alternative 1 YRDP construction activities would be the same as those under the Proposed Projects and therefore would generate ground-borne vibration at the same level as the Proposed Projects scenario. For the same reasons described under YRDP Impact NOISE-PP-3, the predicted vibration levels from YRDP construction under Alternative 1 would be less than the Caltrans threshold of 0.3-inch per second PPV for older residential buildings. Therefore, Alternative 1 YRDP construction impacts related to ground-borne vibration would be **less than significant.**

YRDP Impact NOISE-Alt1-4: Operational Impacts on Ground-borne Vibration

Like the proposed YRDP, traffic generated by operations under Alternative 1 would include occasional visits by maintenance and repair vehicles, as well as an increase in recreational visitors. Ground-borne vibration and noise levels generated from O&M activities would be less than what is expected to be generated during construction due to the lack of heavy equipment needs during O&M. The YRDP would continue to operate according to the USACE WCM, so vibrations from flood control operations would not significantly change. The recreation traffic would be seasonal and would not have any heavy-duty vehicles in the fleet mix. YRDP operations under Alternative 1 would not generate any vibrations that would be felt by sensitive land uses. Therefore, Alternative 1 YRDP operations would have impacts associated with ground-borne vibration that are **less than significant**.

Narrows Impact NOISE-Alt1-1: Operational Impacts on Ambient Noise

Alternative 1 Narrows Project operations would be the same as those under the Proposed Projects and would therefore have the same associated impacts. For the same reasons discussed under Narrows Impact NOISE-PP-1, Alternative 1 Narrows Project operations would have **no impact** associated with ambient noise.

Narrows Impact NOISE-Alt1-2: Operational Impacts on Ground-borne Vibration

Alternative 1 Narrows Project operations would be the same as those under the Proposed Projects and would therefore have the same associated impacts. For the same reasons discussed under Narrows Impact NOISE-PP-2, Alternative 1 Narrows Project operations would have **no impact** associated with ground-borne vibration.

20.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact NOISE-Alt2-1: Construction Impacts on Ambient Noise

Alternative 2 would involve the same construction activities as the proposed YRDP, so it would generate the same associated ambient noise impacts described under YRDP Impact NOISE-PP-1. This increase would cease once construction is complete. Alternative 2 YRDP construction impacts on noise would be potentially significant, However, feasible mitigation measures such as MM NOISE-1 and MM NOISE-2 can be adopted to reduce the impacts to a level that would be less than significant. Therefore, Alternative 2 YRDP construction impacts related to noise would be **less than significant with mitigation incorporated.**

YRDP Impact NOISE-Alt2-2: Operational Impacts on Ambient Noise

Alternative 2 includes the same non-flow YRDP operations and maintenance activities as the Proposed Projects. Like the proposed YRDP, operational noise under Alternative 2 would consist of vehicular traffic related to continuation of the existing operation, maintenance, and inspection activities as well as an increase in visitors due to the recreational improvements. For the same reasons discussed under YRDP Impact NOISE-PP-2, these O&M activities and recreation vehicle traffic are not expected to generate an increase in ambient noise in exceedance of existing standards. Therefore, Alternative 2 YRDP operations would have a **less than significant** impact associated with ambient noise.

YRDP Impact NOISE-Alt2-3: Construction Impacts on Ground-borne Vibration

Alternative 2 YRDP construction activities would be the same as those under the Proposed Projects and therefore would generate ground-borne vibration at the same level as the Proposed Projects scenario. For the same reasons described under YRDP Impact NOISE-PP-3, the predicted vibration levels from YRDP construction under Alternative 2 would be less than the Caltrans threshold of 0.3-inch per second PPV. Therefore, Alternative 2 YRDP construction impacts related to vibration would be **less than significant.**

YRDP Impact NOISE-Alt2-4: Operational Impacts on Ground-borne Vibration

Like the proposed YRDP, traffic generated by operations under Alternative 2 would include occasional visits by maintenance and repair vehicles, as well as an increase in recreational visitors. Ground-borne vibration and noise levels generated from O&M activities would be less than what is expected to be generated during construction due to the lack of heavy equipment needs during O&M. The YRDP would continue to operate according to the USACE WCM, so vibrations from flood control operations would not significantly change. The recreation traffic would be seasonal and would not have any heavy-duty vehicles in the fleet mix. YRDP operations under Alternative 2 would not generate any vibrations that would be felt by sensitive land uses. Therefore, Alternative 2 YRDP operations would have impacts associated with ground-borne vibration that are **less than significant**.

Narrows Impact NOISE-Alt2-1: Operational Impacts on Ambient Noise

Alternative 2 operations at the Narrows Project would utilize existing facilities. No new facilities are proposed, and operations would not be expected to contribute to a significant increase in ambient noise, as discussed under Narrows Impact NOISE-PP-1. Therefore, Alternative 2 Narrows Project operations would have **no impact** associated with ambient noise.

Narrows Impact NOISE-Alt2-2: Operational Impacts on Ground-borne Vibration

Alternative 2 operations at the Narrows Project would utilize existing facilities. No new facilities are proposed, and operations would not be expected to contribute to substantial ground-borne vibration, as discussed under Narrows Impact NOISE-PP-2. Therefore, Alternative 2 Narrows Project operations would have **no impact** associated with ground-borne vibration**.**

20.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact NOISE-NP-1: Construction Impacts on Ambient Noise

Under the No Project Alternative, no construction would occur, so impacts on ambient noise resulting from the No Project Alternative would not change when compared to the Existing Condition. Therefore, **no impact** would occur.

YRDP Impact NOISE-NP-2: Operational Impacts on Ambient Noise

Under the No Project Alternative, Yuba Water would continue to operate the YRDP facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities for flood management purposes. Operational impacts would be generally the same as the Existing Condition, with a possible reduction in noise due to no operation of the power generating facilities. Therefore, the No Project Alternative would have impacts on ambient noise that are **less than significant** and potentially beneficial.

YRDP Impact NOISE-NP-3: Construction Impacts on Ground-borne Vibration

Under the No Project Alternative, no construction would occur, so impacts on vibration resulting from the No Project Alternative would not change when compared to the Existing Condition. Therefore, **no impact** would occur, and no mitigation would be required.

YRDP Impact NOISE-NP-4: Operational Impacts on Ground-borne Vibration

Under the No Project Alternative, Yuba Water would continue to operate the YRDP facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities for flood management purposes. Operational impacts would be generally the same as the Existing Condition, with a possible incremental reduction in vibration due to no operation of the power generating facilities. Therefore, the No Project Alternative would have impacts on ground-borne vibration that are **less than significant** and potentially beneficial.

Narrows Impact NOISE-NP-1: Operational Impacts on Noise

Under the No Project Alternative, Yuba Water would continue to operate the Narrows Project facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities for flood management purposes. Operational impacts would be generally the same as the Existing Condition, with a possible incremental reduction in ambient noise and ground-borne vibration due to no operation of the power generating facilities. Therefore, the No Project Alternative would have impacts on noise and vibration that are **less than significant** and potentially beneficial.

Narrows Impact NOISE-NP-2: Operational Impacts on Ground-borne Vibration

Under the No Project Alternative, Yuba Water would continue to operate the Narrows Project facilities, excluding the power generating facilities, outside of FERC jurisdiction as water supply facilities for flood management purposes. Operational impacts would be generally the same as the Existing Condition, with a possible incremental reduction in ground-borne vibration due to no operation of the power generating facilities. Therefore, the No Project Alternative would have impacts on ground-borne vibration that are **less than significant** and potentially beneficial.

20.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4. Only those projects that could affect noise and vibration are included in the qualitative evaluation that is presented in subsequent sections of this chapter.

20.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

Generally, construction and operational noise impacts are limited to the area directly surrounding the noise source, as noise attenuates with distance and only has the potential to combine with other noise sources in the immediate vicinity, which occurs mainly in more developed areas. Ground-borne vibrations likewise attenuate with distance from the source. In addition, construction noise impacts are temporary and would cease upon completion of work.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to culminate in cumulative impacts to noise and vibration. In addition to the limited geographic extent of noise propagation described above, projects generating noise and vibration impacts would only have the potential to contribute to a significant cumulative impact if they were to occur simultaneously and in the same geographical area. Most of the projects listed in Table 4.9-1 either have been completed or would be completed on a schedule likely different from the Proposed Projects, and they are more geographically removed from them. Only the projects that are close to the Project Area would be likely to have noise and vibration impacts that are cumulative. Considering these factors, the only projects listed in Table 4.9-1 that may result in a cumulatively considerable impact on noise and vibration, when combined with the Proposed Projects, would be the ARC Spillway Project and the Yuba Roadside Fuel Treatment Project. These projects are described in Chapter 4, and their impacts related to noise are addressed below.

The ARC Spillway Project, located in the approximate area of the proposed YRDP facilities, would be constructed at New Bullards Bar Dam, near which the TDS is also proposed to be installed. Construction noise impacts of the ARC Spillway Project include construction equipment operations at the project site, transport of construction workers and construction materials along construction access and haul routes and blasting of rock. The one sensitive receptor identified near the ARC Spillway site is the marina on the western shore near the dam. Mitigation measures were identified to reduce construction noise impacts, including muffling of equipment and limits on construction days and hours. Nevertheless, it was concluded that construction noise impacts of the ARC Spillway Project on the marina would be significant and unavoidable, as noise levels would still exceed Yuba County General Plan thresholds (YCWA 2023).

The Yuba Roadside Fuel Treatment Project proposes the reduction of potential fire fuels along 535 miles of County and private roads. The project would involve mechanical and manual treatments, among other activities, to create shaded fuel breaks within buffers on each side of treated roads. As discussed in Chapter 18, Wildfire, Marysville Road near New Bullards Bar Reservoir has been designated a “very high” priority road for treatment. Work on this project began in 2023. Noise impacts of the Yuba Roadside Fuel Treatment Project would be limited to treatment work – no noise would be generated after work is completed. The number and type of equipment to be used is not known; however, it can be assumed that saws would be used. The cumulative contribution to noise impacts would occur with work along Marysville Road in the vicinity of the Project Area. Work has begun on this project; however, it is not known if any work has occurred along Marysville Road. According to Table 4.9-1, retreatment would occur on affected roads between

five and ten years, so this project would be a recurring noise source. However, it would be limited in duration.

As discussed in this chapter, construction noise associated with the Proposed Projects would occur with new or improved YRDP facilities. Most noise impacts corresponding to Proposed Project operations would consist mainly of occasional visits by maintenance or repair vehicles, which would not be expected to be different from current conditions and typically do not involve heavy-duty vehicles that could generate ground-borne vibrations. As discussed in Chapter 11, Recreation, demand for recreation facilities within the Project Area is estimated to increase by 51 percent from 2012 to 2050, which would lead to an increase in visitor traffic, and subsequent traffic noise, in the surrounding area. Noise from recreation facility operations would be the main contributor by the Proposed Projects to potential cumulative impacts associated with noise. By contrast, operations of the Narrows Project facilities would remain unchanged in the Proposed Projects scenario, and no facilities that could generate substantial noise or vibration either exist or are proposed. Overall, the Proposed Projects would not result in any unmitigated significant noise impacts.

As discussed in Table 4.9-1, it is anticipated that construction of the ARC Spillway would occur in advance of other YRDP relicensing-related construction activities that would not be initiated until after FERC issues a new license. Thus, it is unlikely that the timing of ARC Spillway construction would occur simultaneously with construction activities of the proposed YRDP. Nevertheless, given both the significant and unavoidable conclusion reached in the ARC Spillway EIR, the Cumulative Condition with the Proposed Projects is determined to be cumulatively significant.

YRDP Cumulative Impact NOISE-PP-1: Potential for significant cumulative noise and vibration impacts resulting from the YRDP.

As discussed above, the Cumulative Condition, including the Proposed Projects, would have cumulatively significant noise and vibration impacts relative to the Existing Condition. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Proposed YRDP Project would not have any significant unmitigated noise or vibration impacts. Noise and vibration impacts associated with YRDP construction would be temporary and would cease when construction work is completed. Moreover, as noted, it is unlikely that ARC Spillway construction work would occur at the same time as the proposed YRDP work such that the noise and vibration impacts of the Proposed YRDP Project would combine with those of the ARC Spillway construction. Operational impacts would primarily come from recreation facilities, and would be seasonal, distant from sensitive receptors, and screened by vegetation. For these reasons, the Proposed YRDP Project's incremental contribution to the cumulative noise and vibration impact would not be cumulatively considerable. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** related to noise and vibration.

Narrows Cumulative Impact NOISE-PP-1: Potential for significant cumulative noise and vibration impacts resulting from the Narrows Project.

As discussed above, the Cumulative Condition, including the Proposed Projects, would have cumulatively significant noise and vibration impacts relative to the Existing Condition. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Proposed Narrows Project would not have any significant noise or vibration impacts. Operations of the Narrows Project facilities would remain substantially unchanged compared to the Existing Condition, and no Narrows Project facilities that could generate substantial noise or vibration either exist or are proposed. Given this, the Proposed Narrows Project's incremental contribution to the cumulative noise and vibration impact would not be cumulatively considerable, and the Proposed Narrows Project would have **no cumulative impact** on noise or vibration.

20.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on noise and vibration are noted in Section 20.6.5 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 20.6.6 above. Alternative 1 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include some differences in flow-based operations, those differences are fairly minor (as explained in the project-level analysis above) and would not be substantial enough to alter the analysis and conclusions of the analysis in Section 20.6.6. For the same reasons explained in Section 20.6.6 above, under the Cumulative Condition, including Alternative 1, the cumulative noise and vibration impacts would be significant, primarily due to construction of the ARC Spillway.

YRDP Cumulative Impact NOISE-Alt1-1: Potential for significant cumulative noise and vibration impacts resulting from the YRDP.

As discussed above, the Cumulative Condition, including Alternative 1, would have cumulatively significant noise and vibration impacts relative to the Existing Condition. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the YRDP construction and operations under Alternative 1 would not have any significant unmitigated noise or vibration impacts. Noise and vibration impacts associated with YRDP construction under Alternative 1 would be temporary and would cease when construction work is completed. Moreover, as noted, it is unlikely that ARC Spillway construction work would occur at the same time as the YRDP construction such that the noise and vibration impacts of the Alternative 1 YRDP construction would combine with those of the ARC Spillway construction. YRDP operational impacts under Alternative 1 would primarily come from recreation facilities, and would be seasonal, distant from sensitive receptors, and screened by vegetation. For these reasons, YRDP activities under Alternative 1 would not have a cumulatively considerable incremental contribution to the cumulative noise and vibration impact. Accordingly,

YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** related to noise and vibration.

Narrows Cumulative Impact NOISE-Alt1-1: Potential for significant cumulative noise and vibration impacts resulting from the Narrows Project.

As discussed above, the Cumulative Condition, including Alternative 1, would have cumulatively significant noise and vibration impacts relative to the Existing Condition. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Narrows Project operations under Alternative 1 would not have any significant noise or vibration impacts. Operations of the Narrows Project facilities would remain substantially unchanged under Alternative 1 compared to the Existing Condition, and no Narrows Project facilities that could generate substantial noise or vibration either exist or are proposed. Given this, Narrows Project operations under Alternative 1 would not have a cumulatively considerable incremental contribution to the cumulative noise and vibration impact. Accordingly, Alternative 1 Narrows Project operations would have **no cumulative impact** on noise or vibration.

20.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on noise and vibration are noted in Section 20.6.5 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 20.6.6 above. Alternative 2 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include some differences in flow-based operations, those differences would not alter the analysis and conclusions of the analysis in Section 20.6.6. For the same reasons explained in Section 20.6.6 above, under the Cumulative Condition, including Alternative 2, the cumulative noise and vibration impacts would be significant, primarily due to construction of the ARC Spillway.

YRDP Cumulative Impact NOISE-Alt2-1: Potential for significant cumulative noise and vibration impacts resulting from the YRDP.

As discussed above, the Cumulative Condition, including Alternative 2, would have cumulatively significant noise and vibration impacts relative to the Existing Condition. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the YRDP construction and operations under Alternative 2 would not have any significant unmitigated noise or vibration impacts. Noise and vibration impacts associated with YRDP construction under Alternative 2 would be temporary and would cease when construction work is completed. Moreover, as noted, it is unlikely that ARC Spillway construction work would occur at the same time as the YRDP construction such that the noise and vibration impacts of the Alternative 2 YRDP construction would combine with those of the ARC Spillway construction. YRDP operational impacts under Alternative 2 would primarily come from recreation facilities, and would be seasonal, distant from sensitive receptors, and screened by

vegetation. For these reasons, YRDP activities under Alternative 2 would not have a cumulatively considerable incremental contribution to the cumulative noise and vibration impact. Accordingly, YRDP construction and operations under Alternative 2 would result in a **less than significant cumulative impact** related to noise and vibration.

Narrows Cumulative Impact NOISE-Alt2-1: Potential for significant cumulative noise and vibration impacts resulting from the Narrows Project.

As discussed above, the Cumulative Condition, including Alternative 2, would have cumulatively significant noise and vibration impacts relative to the Existing Condition. However, this impact is primarily due to anticipated construction activities associated with the future construction of the ARC Spillway. As explained above, the Narrows Project operations under Alternative 2 would not have any significant noise or vibration impacts. No Narrows Project facilities that could generate substantial noise or vibration either exist or are proposed under Alternative 2. Given this, Narrows Project operations under Alternative 2 would not have a cumulatively considerable incremental contribution to the cumulative noise and vibration impact. Accordingly, Alternative 2 Narrows Project operations would have **no cumulative impact** on noise or vibration.

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Yuba Water. *See* Yuba County Water Agency.

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CHAPTER 21

AGRICULTURE AND FORESTRY RESOURCES

21.1 Introduction

This chapter describes the environmental setting and regulatory framework for agriculture and forestry resources, and it identifies direct, indirect and cumulative impacts of the Proposed Projects and alternatives during construction and O&M. This chapter evaluates the potential for the Proposed Projects and alternatives to occupy, encroach upon, convert, or damage resources of farmlands, forestlands, and timber production zones. Impacts related to the potential conversion of riparian and oak forest habitats are addressed in Chapter 10, Biological Resources. The geographic extent for agriculture and forestry resources refers to the areas within and directly adjacent to the Project Area, particularly where temporary or permanent ground disturbance would occur beyond existing facilities as a result of construction or operation of the Proposed Projects, as well as Yuba Water Member Unit agricultural lands located in Yuba County that receive irrigation deliveries from the YRDP.

21.2 Environmental Setting

21.2.1 Agricultural Resources

21.2.1.1 Agricultural Land

The predominant land uses in Yuba, Nevada, and Sierra Counties include agriculture. Private-sector employment in Yuba County and throughout the region is highly specialized in agriculture, with one in eleven jobs directly attributable to the agricultural industry (Yuba County 2023; FERC 2019). Agriculture is the single most important economic activity in Yuba County and the value of Yuba County's agricultural production in 2023 was reportedly over $256 million (Yuba County 2023). Approximately 272,480 acres, or 66 percent of the total county area, are comprised of agricultural croplands and pasture (CDFA 2020). The value of agricultural land is not limited to the provision of food, fiber and jobs. Agricultural land also provides open space, which has both psychological and aesthetic benefits, and provides important wildlife habitat. The importance of agricultural land preservation can, therefore, be viewed from both an economic and environmental perspective (CDFA 2020).

Yuba County recognizes the importance of agricultural land and the need to place an emphasis on its preservation. The county's desire to preserve its most valuable farmland and to support the economic viability of the agricultural economy is reflected in goals, objectives, policies and implementation strategies in the Yuba County 2030 General Plan (Yuba County 2011a).[1] The General Plan is not intended to restrict existing, new, or expanding agricultural operations. In fact, agricultural operations including, but not limited to, the raising of livestock, all soil cultivation and

[1] For additional information on the Yuba County 2030 General Plan, see Section 21.3.2.

related activities to crop production, harvesting, and processing, and timber management and harvesting are considered uses by right in all General Plan designations and zoning districts that permit agriculture (Yuba Water 2007).

Farmland maps are created by the Farmland Mapping and Monitoring Program (FMMP), under the direction of the U.S. Department of Agriculture (Figure 21.2-1). In Yuba County, cropland dominates the valley floor, and although there is some grazing land present in the valley, the majority of the grazing lands are located in the foothills. Most of the county's Prime Farmland[2] is located on the valley floor, particularly along the rivers, while most of the Unique Farmland is located in the areas east of Marysville, Linda, Olivehurst-Plumas Lake, but west of the foothills and Beale Air Force Base (Yuba County 2011b). In 2020, total Prime Farmland was measured at 38,969 acres, there were 10,526 acres of Farmland of Statewide Importance, and 33,300 acres of Unique Farmland (DOC 2020).

21.2.1.2 Agricultural Products

Primary agricultural commodities in Yuba County in order of economic crop value include rice, kiwi, walnuts, livestock, prunes/dried plums, peaches, pasture, almonds, nursery stock and timber (Yuba County 2023). In 2023, over 29,800 acres of fruit and nut crops were harvested and over 239,500 acres of field and vegetable crops harvested (Yuba County 2023).

A considerable amount of land in Yuba County is used for rice production, which remains Yuba County's top agricultural crop generating $67 million in 2023 (Yuba County 2023). Rice is cultivated in the majority of the Member Unit service areas (Figure 21.2-2), typically on clay or other poorly drained soils with impervious layers. These soil types are fairly impermeable to water, which increases their water use efficiency for rice production. Rice is an aquatic crop requiring almost continuous flooding until the time of harvest. Fields for rice crops typically are initially flooded during April or May and then irrigated through August, which accounts for the peak in agricultural water diversion volumes during this time period.

[2] For a description of the various FMMP farmland classification types, see Section 21.3.2.1.

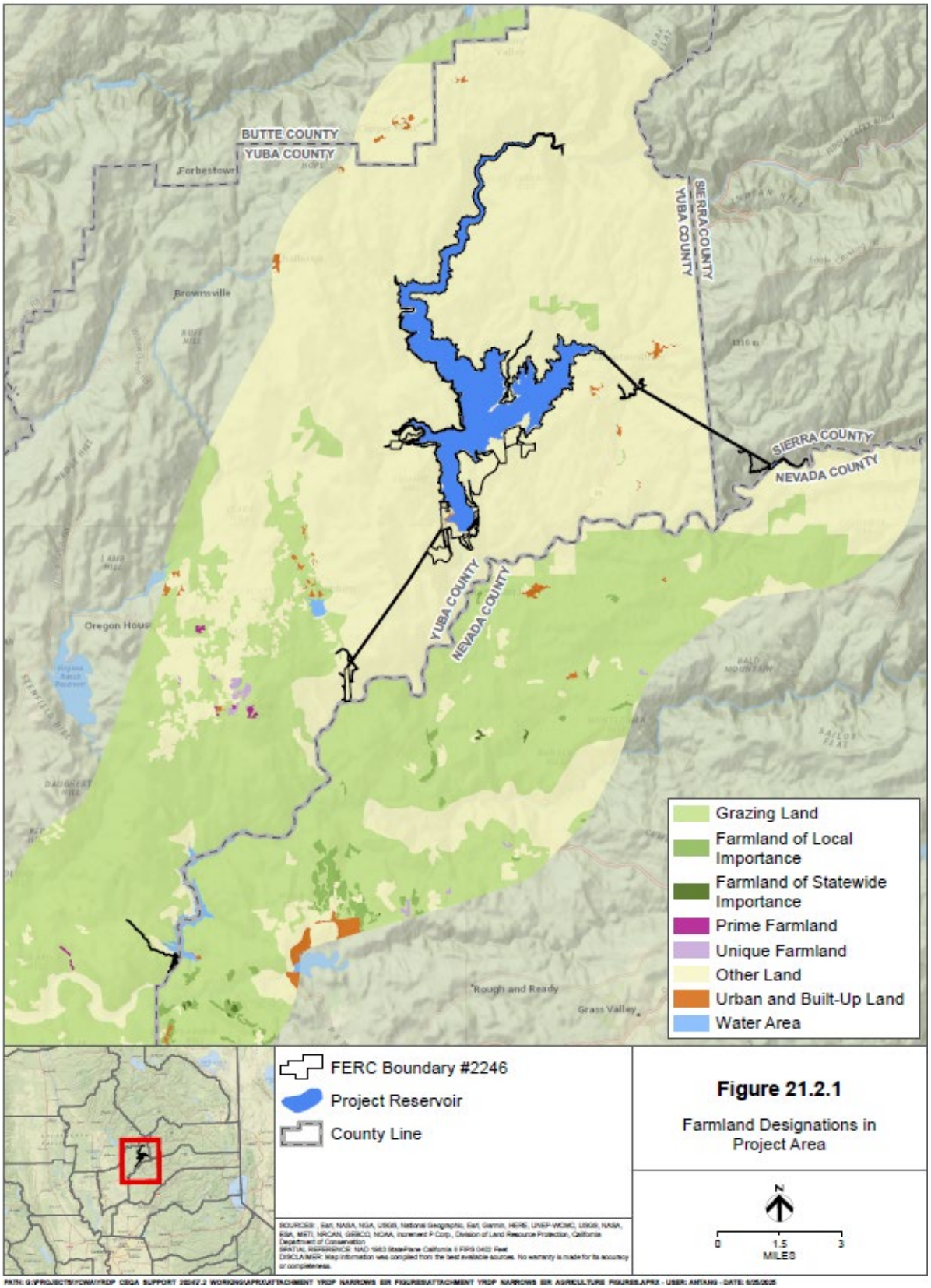

Figure 21.2-1. Yuba County Farmland Designations.

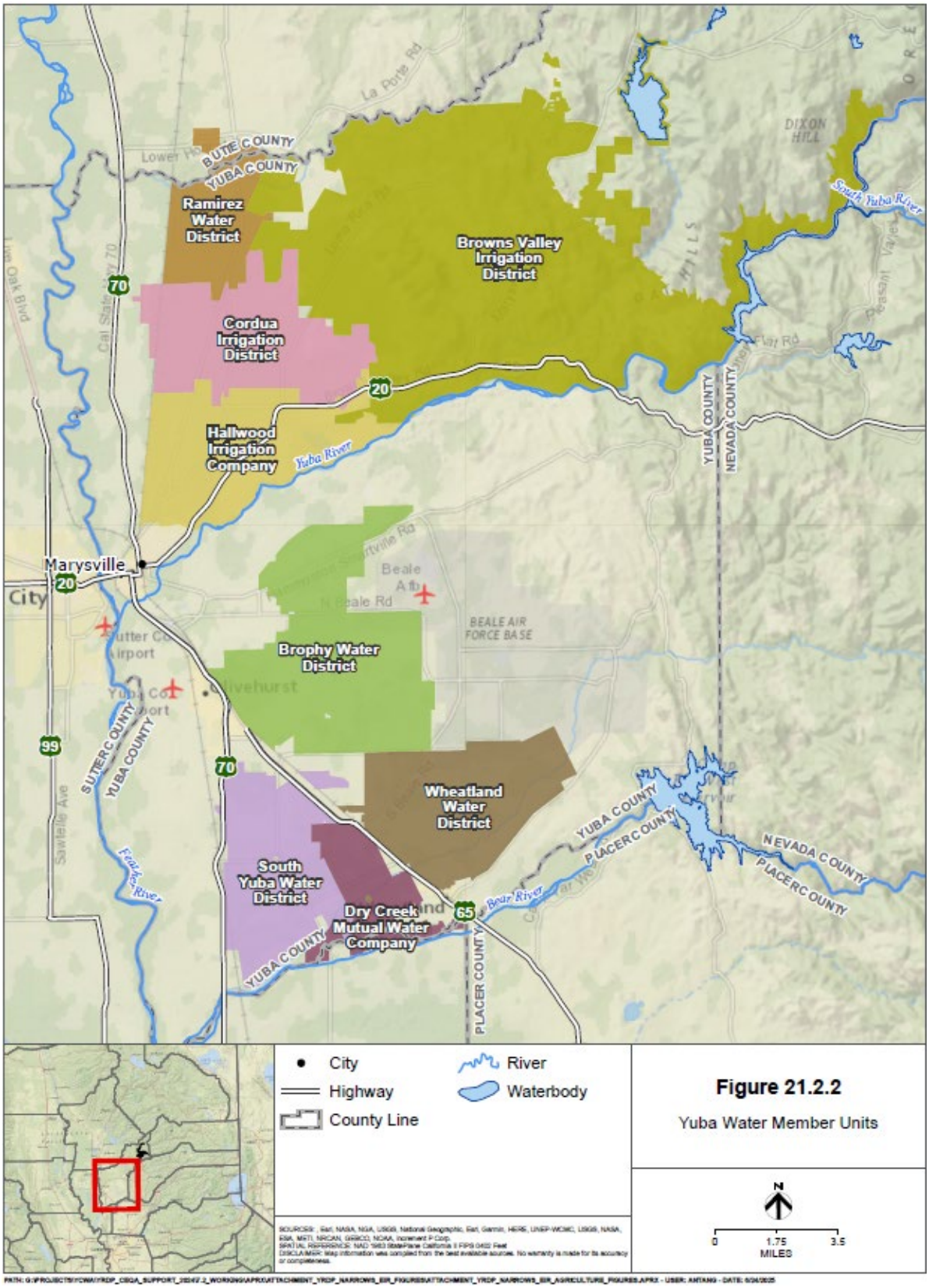

Figure 21.2-2. Member Unit service areas in Yuba County (Yuba Water 2025).

Rice farmers require warmer water during the spring and summer for germination of seeds and growth of rice - 65°F from approximately April through mid-May, and 59°F during the remainder of the growing season (DWR 2001). Generally, water temperatures above 60°F to 65°F are reported to be suitable for rice production (Mutters et al. 2003a). Research indicates that an entire crop may be lost as a result of exposure to as little as 4 days (100 hours) of water temperatures below 55°F during the early part of the growing season, and about 60 percent yield reduction may occur as a result of exposure to as little as 8 days (200 hours) of water temperatures below 60°F (Mutters et al. 2003a).

Reduced water temperatures early in the growing season can cause delayed or failed germination, reduced growth rates, reduced or delayed tillering, panicle sterility, or seed head blanking (Williams and Wenning 2003). Yield reduction associated with cold water has been reported to be most pronounced when cold water exposure occurs early during the growing season (6 weeks to 7 weeks after planting) (Mutters et al. 2003a; Mutters et al. 2003b). However, reproduction, which occurs slightly later, reportedly also is affected by reduced water temperatures (Mutters et al. 2003b).

Water applied to rice paddies is diverted from the main diversion canals via turnouts. The temperature of water entering the paddy tends to be the coldest water temperature in the field, and effects of cold water on rice yield tend to be localized near the field irrigation inlet, although effects have been observed in adjacent checks where cold water has seeped through the dividing levees (Mutters et al. 2003b). Rice production within checks tends to be affected by cold water temperatures in a predictable pattern of distribution of varying severity of effect.

Because rice plants may be more susceptible to the effects of water temperature during the early phases of development when rice plants transition from growth to reproduction (Mutters et al. 2003b), which generally occurs prior to July 31, the analytical time period that is generally utilized for assessing potential water temperature-related impacts on agricultural production, represented by changes in rice production, is May 1 through July 31. Water temperature data at Daguerre Point Dam for the May 1 through July 31 period under the Existing Condition are presented in Appendix 4C.

21.2.1.3 Yuba Water Member Units

As discussed in Chapter 5, Surface Water Resources, one of the purposes of the YRDP is to supply water to Yuba Water's Member Units, which include eight water districts, irrigation districts and mutual water companies that have water supply contracts with Yuba Water for delivery of surface water from New Bullards Bar Reservoir to their agricultural customers. Each year, Yuba Water supplies about 260,000 acre-feet of water to the Member Units (Yuba Water 2025). Yuba Water also manages the balance of water supply allocations and supply reductions among the Member Units during dry years. Additional details about surface water and groundwater supplies provided to the Member Units are described in Chapters 5 and 6 of this DEIR.

Together, the eight Member Units convey water to local farmers and ranchers that irrigate approximately 80,000 acres of productive farmland with water (Yuba Water 2015, as cited in Yuba Water et al. 2024). A brief description of each Member Unit is provided below.

- **Brophy Water District** - Brophy Water District (BWD) began receiving Yuba River water for irrigation in 1983 under Yuba Water's water rights through a joint arrangement with South Yuba Water District. Since 1985, all water delivered to Brophy has been by contract with Yuba Water and provided through the South Canal. BWD's service area covers approximately 17,200 acres south of the Yuba River between Olivehurst and Linda on the west and Beale Air Force Base on the east. BWD's service area includes approximately 12,700 acres of land used for pasture and to grow crops including rice and prunes (Yuba Water 2025).
- **Browns Valley Irrigation District** - The Browns Valley Irrigation District (BVID) was formed in 1888 and is one of California's longest continually operating irrigation districts. BVID's service area covers more than 55,000 acres in the Sierra foothills and Sacramento Valley, with approximately 7,100 acres in the Yuba Water service area. The district also diverts water from Dry Creek at Collins Lake, which BVID built in 1963. BVID serves more than 1,500 agricultural and domestic irrigation customers in the Browns Valley and Loma Rica areas of Yuba County (Yuba Water 2025).
- **Cordua Irrigation District** - Cordua Irrigation District first began diverting water from the Yuba River in the late 1890s. Diversions are made at Daguerre Point Dam into the Cordua-Hallwood Canal. Cordua serves approximately 11,500 acres north of the Yuba River, with approximately 9,100 productive acres and approximately 100 delivery locations. Rice is the primary crop in this district (Yuba Water 2025).
- **Dry Creek Mutual Water Company** - Dry Creek Mutual Water Company began receiving Yuba River water for irrigation in 1998 under agreement with Yuba Water. Water is provided to Dry Creek Mutual by Yuba Water through the South Canal. The district's service area covers approximately 4,600 acres north of the Bear River and west of Highway 65, of which approximately 4,200 acres are used for pasture and to grow walnuts and rice (Yuba Water 2025).
- **Hallwood Irrigation Company** - Hallwood Irrigation Company began diverting water for irrigation from the Yuba River in 1909. Hallwood's service area covers approximately 12,000 acres south of Cordua Irrigation District, west of BVID and immediately north of the Yuba River, of which approximately 9,400 acres are used for pasture and to grow rice, walnuts and prunes (Yuba Water 2025).
- **Ramirez Water District** - The Ramirez Water District began diverting water for irrigation from the Yuba River in 1978. Their service area covers approximately 5,900 acres north of Cordua Irrigation District and west of BVID, which includes approximately 4,500 acres of productive farmland and pasture (Yuba Water 2025).
- **South Yuba Water District** - The South Yuba Water District began receiving Yuba River water for irrigation in 1983 under a joint agreement with Brophy Water District. Their service area covers approximately 10,000 acres north of the Bear River and east of Highway 70, which includes approximately 7,500 acres of rice crops and pasture (Yuba Water 2025).

- **Wheatland Water District** - Wheatland Water District (WWD) began receiving Yuba River water for irrigation in 2009 under an agreement with Yuba Water. The WWD service area covers approximately 11,300 acres north of the Bear River and east of Highway 65, of which approximately 7,400 acres are used for pasture and to grow rice, prunes and walnuts (Yuba Water 2025).

While many parcels in the Project Vicinity have designated land uses of agricultural/rural residential, the location and topography, along with the existence of National Forest lands, limit the scope of agricultural activities within the Project Area. Grazing lands are found primarily in the central and eastern portions of Yuba County, in the foothills of the Sierra Nevada. Grazing land is also in southwestern Nevada County, adjacent to Narrows Project facilities and the border with Yuba County (DOC 2024). Only about 7 percent of land in Sierra County is considered agricultural land, and none has been so designated in the area of the YRDP facilities (Sierra County 2012). The limited amount of agricultural land in Sierra County is located in the upper Yuba River Watershed above the Project Area and north of Sierraville, CA, near the border between Sierra, Plumas and Lassen counties (DLRP 2020).

21.2.2 Forestry Resources

Another predominant land use in Yuba, Nevada, and Sierra counties includes timber (FERC 2019). Forestry resources are defined as timberland[3], land zoned as a Timberland Production Zone (TPZ)[4] by the county, where applicable, and USFS administrative forest boundaries.

PRC § 12220(g) defines "forestland" as land that can support 10 percent native tree cover and forest vegetation of any species, including hardwoods, under natural conditions and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Portions of the proposed construction sites are located on land that would qualify as forestland. In all, the Project Area contains approximately 6,364.1 ac of forest and woodland, including coniferous and oak forests and woodlands. Refer to Chapter 10, Biological Resources, for additional details on land cover/habitats within the Project Area. For the purposes of this analysis, it is assumed that vegetation communities within the Project Area containing woodlands would be classified as forest land (as defined in PRC § 12220(g)).

Although not as large a contributor as other agricultural products, timber production contributes to the local economies. In 2023, Yuba County produced 5,082,000 board feet of timber, with a valuation of $623,785. Timber was the 10th most valued commodity in Yuba County (Yuba County

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[3] As defined by CA Govt Code §51104(f) (2024), which states that timberland is "…*privately owned land, or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre*".

[4] As defined by CA Govt Code §51104(g) (2024), which states that a "*Timberland production zone" or "TPZ" means an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses… With respect to the general plans of cities and counties, "timberland preserve zone" means "timberland production zone*."

2023). In Nevada County, timber production in 2022 was valued at $328,100, accounting for approximately 2 percent of total agricultural production value (Nevada County 2022). In Sierra County, timber production in 2021 was valued at $299,263 (Sierra County 2021).

All three counties within the Project Area contain large, forested areas that provide timber resources. In 2005, there was a total of 95,000 acres of forestland in Yuba County—55,000 ac were privately owned, and 40,000 acres were publicly owned (Yuba County 2011a). Most forests are in the foothills and mountain areas of eastern and northeastern Yuba County (Yuba County 2011b). In Nevada County, approximately 324,000 acres of land were designated as forest – more than half of the total county land area (Nevada County 2014). Approximately 533,796 acres of land in Sierra County – approximately 91 percent of total county land - is designated as forest (Sierra County 2012). Most of the forest lands are located in the areas upstream of Englebright Dam. There are limited areas of forest land downstream of Englebright Dam, located between Englebright Dam and the community of Smartsville.

The Project Area includes portions of two National Forests, managed by the Forest Service. The Tahoe National Forest is bounded on the west by the North Yuba River, and it extends eastward away from the New Bullards Bar Marina into the Sierra Nevada. It consists of 794,374 ac of forestland. The Plumas National Forest is bounded to the east by the North Yuba River and extends westward. towards the Emerald Cove Marina. The Plumas National Forest consists of 1,146,000 ac of forestland. Portions of the Project Area are within the Tahoe National Forest. Each National Forest is managed under its respective LRMP to ensure the responsible use and protection of resources (see below and Chapter 22, Land Use and Planning).

21.3 Regulatory Setting

21.3.1 Federal Plans, Policies, Regulations, and Laws

21.3.1.1 Federal Farmland Protection Act

The U.S. Natural Resources Conservation Service (NRCS), within the U.S. Department of Agriculture, is primarily responsible for implementing and administering the Federal Farmland Protection Policy Act (FPPA). This law is intended to protect farmland and minimize the extent to which Federal activities contribute to the unnecessary and irreversible conversion of farm and ranch land to non-agricultural uses (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.). The FPPA also seeks to ensure that Federal policies are administered in a manner that is compatible with state, local and private efforts to protect farmland. The FPPA also designates unique and important farmland soil types (e.g. “Prime Farmland”, “Important Farmland”, “Farmland of Statewide Importance: and “Farmland of Local Importance”).[5] In places, additional farmlands of local importance may include tracts of land that have been designated for agriculture by local ordinance.

[5] For additional information, see Section 21.3.2.1 below.

21.3.1.2 National Forest Land and Resource Management Plans

As noted, both the Tahoe National Forest and the Plumas National Forest have LRMPs. The goals of the LRMPs are to guide efficient use and protection of National Forest resources, fulfill legislative requirements, and balance local, regional, and national needs. The LRMPs include a supply and demand analysis, public issues, concerns and opportunities summary, and establishes management direction and monitoring and evaluation requirements. Among the issues evaluated in the LRMPs is timber production and balancing this activity with other objectives, such as recreation use, preservation of habitat, and maintenance of water and visual quality (Tahoe National Forest 1990).

The Tahoe National Forest LRMP indicated that available wood supply from the Tahoe National Forest depends upon the amount of land capable of producing at least 20 cubic feet of timber per ac per year (estimated at 649,867 acres) and which is not withdrawn from timber production. Timber-producing land is classified into five major forest types: mixed conifer, red fir, eastside pine, lodgepole pine, and hardwoods. There were 449,842 acres of intensively managed forest land (land capable of annually producing at least 85 cubic feet of timber per acre) in the National Forest at the time the LRMP was originally adopted (Tahoe National Forest 1990).

The Plumas National Forest LRMP stated that the Timber Management Plan current at the time the LRMP was adopted estimated a potential annual yield of 251 million board feet for the fiscal 1976-1985 decade, based on land classification and choice of silviculture and harvest types. However, congressional funding has generally limited the actual harvest to 205 million board feet per year (Plumas National Forest 1988). More recent information on timber harvesting in both the Tahoe and Plumas National Forests is not available. However, Forest Service data from fiscal years 1984 to 2024 show that timber harvesting has declined in the Pacific Southwest Region, where both National Forests are located (USFS 2024).

21.3.2 State Plans, Policies, Regulations, and Ordinances

21.3.2.1 Farmland Mapping and Monitoring Program

Government Code Section 65560(c) defines agricultural land as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. For environmental review purposes under CEQA, the categories of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland constitute 'agricultural land' (Public Resources Code Section 21060.1).

The California Department of Conservation (DOC), Division of Land Resource Protection (DLRP), administers the FMMP. The FMMP produces maps and statistical data used for analyzing changes in California's agricultural resources. Every two years, their maps are updated using aerial photographs, a computer mapping system, public review, and field reconnaissance. The FMMP rates agricultural land according to soil quality and irrigation status. These ratings are used to prioritize farmland conservation efforts. The FMMP uses the term "Important Farmland" to describe lands that meet certain criteria. The following lands (among others) are considered Important Farmland by the FMMP:

- **Prime Farmland:** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Farmland of Statewide Importance:** Farmland that is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland:** Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but it may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
- **Farmland of Local Importance:** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. In some counties, Confined Animal Agriculture facilities are part of Farmland of Local Importance, but they are shown separately.

Along with these categories, the FMMP adds Grazing Land to its definition of "agricultural land." Grazing Land is land on which the existing vegetation is suited for grazing by livestock.

Farmed areas that lack modern soil survey information or for which there is expressed local concern about farmland status use the following interim farmland mapping categories in place of FMMP land use categories:

- **Irrigated Farmland:** Cropped land with a developed irrigation water supply that is dependable and of adequate quality. Land must have been used for irrigated agricultural production at some time during the two update cycles prior to the mapping date.
- **Non-irrigated Farmland:** Land on which agricultural commodities are produced on a continuing or cyclic basis using only stored soil moisture.

21.3.2.2 Williamson Act

The Land Conservation Act of 1965 (California Government Code § 51200 *et seq.*), commonly referred to as the Williamson Act after its legislative sponsor, is legislation designed to encourage the conservation of agricultural lands that otherwise may be converted to development. Under the Williamson Act, local governments may enter contracts with private landowners for the purpose of promoting the continued use of the relevant land in agricultural or related open space use. In return, landowners receive property tax assessments that are based on farming or open space uses rather than on the full market value of the land. These contracts are valid for 10 years and can be renewed, unless the landowner declines to renew the contracts. Contracts also may be cancelled, upon landowner request, by the County Board of Supervisors, with observance of specified conditions.

Yuba County does not participate in the Williamson Act program, but Nevada and Sierra Counties are participants. Figure 21.3-1 shows the identified Williamson Act parcel in Nevada and Sierra Counties in the vicinity of the Project Area.

21.3.2.3 California Timberland Productivity Act

The California Timberland Productivity Act of 1982 describes the powers and duties of local governments in protecting timberlands. The law establishes TPZs on all qualifying timberland, which restricts land use to growing and harvesting timber, along with compatible uses. The Act discourages premature or unnecessary conversion of timberland to urban or other uses and expansion of urban services into timberland, and it encourages investment in timberlands based on reasonable expectation of harvest. Lands previously designated as TPZ in Yuba County are now zoned TP – Timberland Production.

21.3.3 Regional/Local Plans, Policies, Regulations, and Ordinances

21.3.3.1 Yuba County General Plan

Yuba County regulates private land use in accordance with the 2030 Yuba County General Plan and County zoning ordinances. The 2030 County General Plan, adopted in 2011 with the Safety and Housing Elements updated in 2021, guides the development of lands in unincorporated Yuba County. It designates land uses and sets forth goals and policies applicable to future development. Specific to agriculture and forestry, the 2030 County General Plan is designed to ensure that agriculture, forestry, and related industries will continue to play a significant role in both the County's economic development prospects and its rural character (Yuba County 2011a). The General Plan Land Use Diagram indicates that most of the land in the Project Area is designated Natural Resources, which covers agricultural and forest lands.

Several Yuba County General Plan policies apply to agriculture and forestry resources. These include the following:

- **Policy CD 11.3**. The County's land use planning actions will support existing economic assets, such as Beale Air Force Base, Yuba College, local agriculture, mining and existing local businesses.
- **Policy CD 11.5.** The County will support agriculture, agricultural processing, agricultural tourism, ecological tourism, recreational uses, and other natural-resource based economic development projects in areas with land-based natural resources, natural beauty, and cultural attractions.

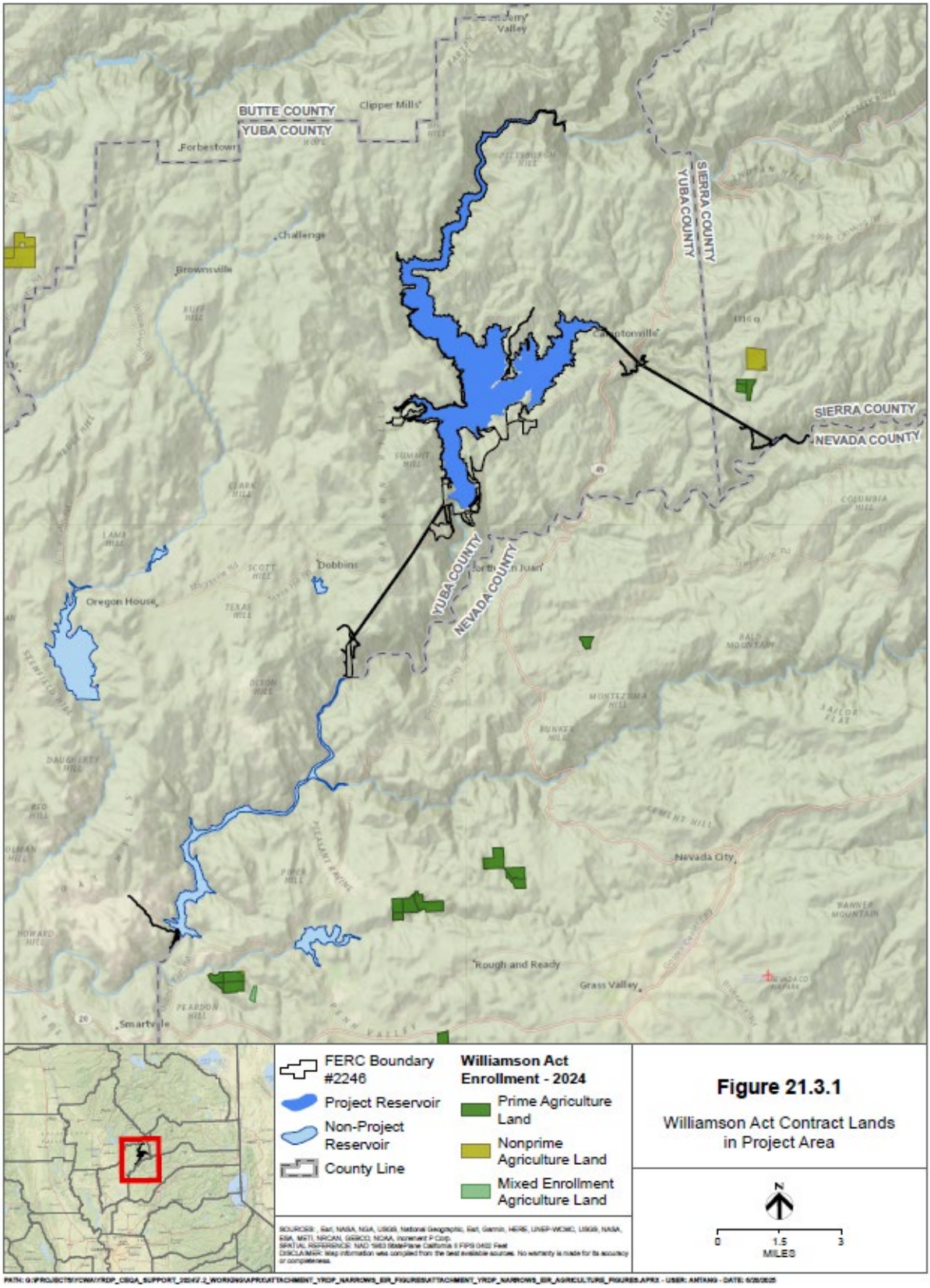

Figure 21.3-1. Williamson Act Parcels.

- **Policy CD 13.1.** Growth should be phased from developed areas and existing infrastructure outward in a logical, efficient manner, and in a way that avoids premature conversion of agricultural lands, changes in rural character, and unnecessary loss of other land-based natural resources.
- **Policy HS 10.16.** Mining, forestry, and agricultural noise will not be considered a nuisance when generated in areas designated by the General Plan for these uses.
- **Policy NR 3.1.** The County's zoning and development standards, including allowable uses and minimum lot sizes, will be designed to support agriculture-related economic activities and avoid conflict with ongoing agricultural operations.
- **Policy NR 3.13.** The County's Economic Development Strategy and Work Plan should include as a focus the expansion of existing agriculture and agriculture-related industries and development of new value-added activities, agricultural processing, distribution, marketing and sales, and other agriculture-related economic activities.
- **Policy NR 3.15.** The County will support efforts to agree on a regional approach in the Yuba-Sutter area among counties and cities to protect local agricultural resources and the local agricultural economic base.
- **Policy NR 4.1.** The County's zoning and development standards for Forest areas will be designed and implemented to support and avoid conflict with ongoing timber harvest operations and forestry-related economic activities.
- **Policy NR 4.2.** Uses in Timberland Preserve Zones (TPZs) shall be compatible with ongoing forestry and timber harvest operations.

21.3.3.2 Yuba County Zoning Ordinance

The Yuba County Zoning Ordinance (Yuba County Code Title XI, Division II) is intended to implement the County's General Plan and to protect and promote public health, safety, peace, comfort, convenience, prosperity and general welfare. More specifically, the Zoning Ordinance provides a precise guide for the physical development of the County in a manner as to progressively achieve the arrangement of land uses depicted in the Yuba County General Plan, consistent with the goals and policies of the General Plan. It accomplishes this by designating zones for parcels under County jurisdiction and setting forth allowable land uses and development standards within each zone.

The Project Area surrounding New Bullards Bar Reservoir is predominantly zoned as Resource Preservation and Recreation (RPR). This zone district is primarily located within the natural resource areas of the County. Among the purposes of the RPR district are preservation of land containing natural or potential parkland for passive recreational activities and nonstructural uses and preservation of lands whose natural resources are of significant long-range social, economic and environmental importance. Other zoning designations in the area include Timber Production (TP), formerly TPZ (see Section 21.3.2.4 above). The TP zones are located mainly to the west of New Bullards Bar Reservoir. No lands zoned TP are located downstream of Englebright Dam. Scattered parcels to the north, east, and southwest of New Bullards Bar Reservoir are designated AG-20, an agricultural/residential zone with a minimum size of 20 acres.

For the portion of the Narrows Project in Yuba County, the area in the vicinity of Englebright Dam is zoned RPR. Farther upstream, land is zoned AG-20. No land in this area is zoned TP.

21.3.3.3 Nevada County General Plan

Like the Yuba County General Plan, the Nevada County General Plan, adopted in 1996 and last amended in 2014, guides the development of lands in unincorporated Nevada County. The General Plan Land Use Diagram indicates that the Nevada County land in the Project Area is designated Rural.

The Nevada County General Plan has a Forest Element and an Agriculture Element. The goal of the Forest Element is to identify and maintain sustainable timber lands and resources (Nevada County 2014). Policies from the Forest Element that are potentially applicable include the following:

- **Policy 15.1.** Maintain a low density of allowable development in the Forest land use designation as shown on the General Plan Land Use maps, in order to protect the major areas of potential timber resources in the County from conversion to other more intensive uses.
- **Policy 15.2.** Limit the provision of public facilities and services in important timber areas, except where necessary to address public health or safety problems.
- **Policy 15.5.** Encourage and provide for use of the Timberland Production Zone ("TPZ") provisions of the County zoning regulations in the Estate, Rural and Forest land use designations, for those lands which have significant commercial timber value.

The goals of the Agriculture Element include encouraging the use of significant agricultural lands and operations in areas designated Rural Regions and promoting a strong and sustainable local agricultural economy (Nevada County 2014). Policies and objectives from the Agriculture Element that are potentially applicable include the following:

- **Policy 16.1.** Agriculture is strongly encouraged in Rural Regions and allowed in Community Regions. Agricultural land shall include all those land areas of Nevada County now used for agricultural operations, or upon which agricultural operations may be established in the future in conformance with applicable zoning regulations.
- **Policy 16.4.** In Rural Regions, maintain existing agricultural zoning on lands designated as Rural on the General Plan Land Use maps, including land in the RA, A1, AE, FR and TPZ districts, to allow for the continuation of existing agricultural operations, as well as the introduction of new agricultural operations consistent with the regulations of the respective districts.
- **Objective 16.3.** Minimize and reduce pressures to convert lands zoned for agricultural use to more intensive uses.
- **Policy 16.13.** Continue participation in the Williamson Act program. Parcels eligible for Williamson Act contract shall be 5 or more acres in size.

21.3.3.4 Nevada County Zoning Ordinance

Like the Yuba County Zoning Ordinance, the Nevada County Zoning Ordinance (Nevada County Code Title 3, Chapter II) is designed to serve as the primary tool to implement and ensure consistency with the goals, objectives, and policies of the Nevada County General Plan. Like the Yuba County Zoning ordinance, the Nevada County Zoning Ordinance establishes zoning districts and development regulations for each district.

Near Englebright Reservoir, County land is zoned AG-40 - General Agricultural (AG), 40-ac minimum. The AG zone provides areas for farming, ranching, agricultural support facilities and services, low intensity uses, and open space. Near the Our House Diversion Dam, County land is zoned FR-40 – Forest (FR), 40-ac minimum. The FR zone provides areas for the protection, production and management of timber; timber support uses, including but not limited to equipment storage and temporary offices; low intensity recreational uses; and open space.

Nevada County designates land for timber production as a TPZ. There are no TPZs in the vicinity of Englebright Reservoir.

21.3.3.5 Sierra County General Plan

Like the other two general plans, the Sierra County General Plan, adopted in 1996 and last amended in 2012, guides the development of lands in unincorporated Sierra County. The General Plan Land Use Diagram indicates that the Sierra County land in the Project Area is designated Forest.

The Sierra County General Plan has a Timber Resources Element and an Agricultural Element. The goals of the Timber Resources Element are to support the prudent management of timber, to maintain the timber industry as a viable part of the County economy, and to bring back and maintain the forest, lake, and stream environment in Sierra County to a healthy, fire resistant, and productive system that will be a strong asset to the quality of life and citizens of Sierra County (Sierra County 2012). Policies from the Timber Resources Element that are potentially applicable include the following:

- **Timber Resources Policy 6 (Jobs/Economy).** Actively strive to maintain the timber industry and related individuals as a main economic force in the County_ Discourage annually fluctuating USFS and GDF staff.
- **Timber Resources Policy 13 (Conversion of Timber Lands**). Encourage retention of timber lands for that use through land use decisions; seek to avoid the pressure to convert timber lands to urban uses that arises when residences or related uses are approved amid timber producing lands.
- **Timber Resources Policy 14 (Conflicting Land Uses**). Encourage and initiate Timber Production Zoning to protect timber lands.
- **Timber Resources Policy 15 (Conversion of Timber Lands**). Encourage land use patterns that do not create conflicts with timber harvest operations.

The goals of the Agricultural Element include protecting and defending agriculture as a priority land use and providing a strong, local agricultural economy. (Sierra County 2012). Policies from the Agricultural Element that are potentially applicable include the following:

- **Agricultural Policy 2 (Protection of Agriculture and Parcel Size Relationship to Economic Viability).** Focus developments in Community Areas and ensure contiguous urban development.
- **Agricultural Policy 6 (Open Range).** Continue to support the Policy Supporting Natural Resource Industries in Sierra County. [Note: This involves land in agricultural, timber production, or forest.]
- **Agricultural Policy 8 (Open Range).** Continue to support the existing County open range policy.
- **Agricultural Policy 17 (Range/Grazing).** Continue to encourage grazing uses of federal lands in the County.

21.3.3.6 Sierra County Zoning Ordinance

As with the other zoning ordinances, the Sierra County Zoning Ordinance (Sierra County Code Title 15) is designed to enhance and implement the County General Plan, as well as provide a guide for the growth and development of Sierra County in accordance with the General Plan. The Zoning ordinance establishes zoning districts and development regulations for each district.

Most of the land in the vicinity of the YRDP facilities is zoned GF – General Forest. The GF zone allows the growing and harvesting of agricultural and forest products, grazing of livestock, single-family residences and accessory buildings, and public utility distribution facilities except for major transmission facilities. Some parcels in the vicinity are zoned TPZ, which is intended to maintain the availability of timberland in accordance with State legislation.

21.4 Impact Assessment Methodology

The impact analysis for agriculture and forestry resources follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. The geographical scope of the impact analysis for agriculture and forestry resources is the area within and adjacent to the Project Area, particularly where temporary or permanent ground disturbance would occur beyond existing facilities as a result of construction or operation of the Proposed Projects, as well as Yuba Water Member Unit agricultural lands located in Yuba County that receive irrigation deliveries from the YRDP.

More specifically, the impact analysis that is conducted on agricultural and forestry resources that potentially could be affected by the construction and operations of the Proposed Projects and alternatives focuses on: (1) agriculture resources defined as: (a) Important Farmland designated under the DOC FMMP, specifically Prime Farmland, Farmland of Statewide Importance, and Unique Farmland; (b) land zoned for agricultural use by each county; (c) land under Williamson Act as recorded by each county; and (d) Important Farmland as defined under the FPPA, specifically Prime Farmland, Farmland of Statewide Importance, and Unique Farmland; and (2)

forest resources defined as: (a) forest land; (b) timberland; and (c) land zoned for timber production. Forestry resources would mainly be affected in the areas upstream of Englebright Dam, while agricultural resources would primarily be affected in the Lower Yuba River.

CEQA Guidelines Appendix G defines "Farmland" in the same manner as Important Farmland by the FMMP, except that Farmland of Local Importance is excluded. For the purposes of CEQA analysis conducted by this EIR, the Appendix G definition of Farmland is used to evaluate agricultural impacts, and the significance criteria set forth in Section 21.4.1 below follows Appendix G

Impacts on agriculture and forestry resources were identified qualitatively based on the potential to affect such agricultural and forest lands. A desktop analysis was completed to collect and analyze data related to land use in the Project Area. For the purposes of this analysis, information related to agriculture and forestry resources was collected using the following sources in the assessment of potential impacts:

- Yuba County General Plan (Yuba County 2011)
- Yuba County Zoning Map
- Nevada County General Plan (Nevada County 2014)
- Sierra County General Plan (Sierra County 2012)
- California Department of Conservation Important Farmland Finder
- Tahoe National Forest Land and Resource Management Plan (Tahoe National Forest 1990)
- Plumas National Forest Land and Resource Management Plan (Plumas National Forest 1988)

Chapter 5, Surface Water Resources, describes potential impacts of the Proposed Projects and the alternatives on deliveries of water to the Member Units. Information from Chapter 5 was used to assess potential impacts of water deliveries to agricultural lands reliant on irrigation. Also, information from Chapter 8, Surface Water Quality, was used to assess impacts on irrigated agricultural lands as they relate to water temperature and ability to grow certain crops, mainly rice.

Chapter 6, Groundwater Resources, notes that deficiencies in surface water deliveries typically result in additional groundwater pumping to meet agricultural demands. In some cases, fallowing may occur rather than groundwater pumping, notably when the total reduction in surface water delivery exceeds the aggregate groundwater pumping capacity. For this EIR analysis, Chapter 6 states that groundwater pumping was assumed regardless of overall pumping capacity, as additional groundwater production wells could be installed to meet the demand rather than fallowing. This assumption has been applied to potential impacts related to agricultural land conversion under the Proposed Projects and the alternatives.

There would be no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

21.4.1 Impact Indicators and Significance Criteria

For agriculture and forestry resources, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on agriculture and forestry resources if it would:

- **Impact AG-1**: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use.
- **Impact AG-2**: Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- **Impact AG-3**: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)[6]), timberland (as defined by Public Resources Code Section 4526[7]), or timberland zoned TP (as defined by Government Code Section 51104(g)[8]).
- **Impact AG-4**: Result in the loss of forest land or conversion of forest land to non-forest use.
- **Impact AG-5**: Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

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[6] Public Resources Code Section 12220(g) defines forest land as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

[7] Public Resource Code Section 4526 defines timberland as land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for and capable of growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees.

[8] Government Code Section 51104(g) defines a timberland zoned TP as an area that has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, which include but are not limited to: (1) management for the watershed; (2) management for fish and wildlife habitat or hunting and fishing; (3) a use integrally related to the growing, harvesting and processing of forest products, including but not limited to roads, log landings, and log storage areas; (4) the erection, construction, alteration, or maintenance of gas, electric, water, or communication transmission facilities; (5) grazing; and (6) a residence or other structure necessary for the management of land zoned as timberland production.

21.5 Environmental Impact Analysis

21.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact AG-PP-1: Construction Impacts on Conversion of Farmland

There is no agricultural land present within the areas upstream of Englebright Dam. There is no Important Farmland as defined by the FMMP or Farmland as defined by CEQA Guidelines Appendix G. The California Department of Conservation's Important Farmland Finder indicates that the predominant land uses are Grazing Land and Other Land (DOC 2024). "Other Land" is a designation of land not otherwise classified on Important Farmland maps and is a non-agricultural designation. In short, YRDP construction activities would have **no impact** related to direct conversion of agricultural lands, including Farmland as defined by CEQA Guidelines Appendix G. No CEQA mitigation would be required.

YRDP Impact AG-PP-2: Operational Impacts on Conversion of Farmland

As noted, there is no agricultural land present within the areas upstream of Englebright Dam, and there is no land designated as Farmland as defined by CEQA Guidelines Appendix G or Important Farmland as defined by the FMMP. Therefore, YRDP operations would have **no impact** related to direct conversion of Farmland. No CEQA mitigation would be required.

YRDP Impact AG-PP-3: Construction Impacts on Agricultural Zoning and Williamson Act Lands

YRDP construction would be mostly limited to existing facilities; however, new recreation facilities are proposed. The new recreation facility sites are zoned by Yuba County as RPR. YRDP construction would not occur on the parcels in the vicinity of New Bullards Bar Reservoir zoned AG-20. Yuba County does not participate in the Williamson Act land conservation program, so no lands have Williamson Act contracts. In short, YRDP construction activities would have **no impact** related to conflicts with agricultural zoning or Williamson Act contracts. No CEQA mitigation would be required.

YRDP Impact AG-PP-4: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As noted, there would be no zoning conflicts with agricultural resources, as no agricultural zones would be affected. As noted, Yuba County does not participate in the Williamson Act land conservation program, so no lands have Williamson Act contracts. Therefore, YRDP operations would have **no impact** related to conflicts with agricultural zoning or Williamson Act contracts. No CEQA mitigation would be required.

YRDP Impact AG-PP-5: Construction Impacts on Zoning of Forest Land

As noted, YRDP construction would be mostly limited to existing facilities. The projects would not conflict with the Yuba County Development Code because "zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy" (California Government Code § 53091(e)).

However, new recreation facilities are proposed. The new recreation facility sites are zoned by Yuba County as RPR. Forestland falls within this zoning designation and is present within the project sites. However, the RPR zone also allows for recreational uses, including campgrounds. Also, the new recreation facilities would be on National Forest lands, which allow for a variety of uses such as recreation, in conformance with guidance (see Chapter 11, Recreation). Therefore, YRDP construction activities related to zoning of forest land would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact AG-PP-6: Operational Impacts on Zoning of Forest Land

As noted, there would be no zoning conflicts with forest resources, as most work would occur at existing facilities, and the RPR designation allows for development of the proposed new recreation facilities. Therefore, YRDP operational activities related to zoning of forest land would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact AG-PP-7: Construction Impacts on Loss or Conversion of Forest Land

The proposed YRDP construction footprints are anticipated to impact 337.3 acres of vegetation communities (see Table 10.5-2 in Chapter 10, Non-Fisheries Biological Resources, and Appendix 10G). Some of the impacted communities are not considered to be forest land, such as Barren and Lacustrine. The Fremont Cottonwood – Red Willow Forest, which is found mainly along streams, is not a forest that could potentially have timber production use. The impact acreage on these three vegetation communities would be approximately 22.1 acres, which leaves approximately 315.2 acres of vegetation communities that may be considered forest that would be affected by YRDP construction activities. A small amount of this impact would occur in the immediate area of the Our House Diversion Dam in Sierra County. The remaining impact would occur in Yuba County.

Appendix 10G illustrates where the potential disturbance of vegetation communities resulting from the YRDP construction activities would occur. Most of these activities that would affect substantial acreage of forest land would include improvements to existing recreation facilities such as the Cottage Creek Campground and Boat Launch and the Hornswoggle and Dark Day Campgrounds, as well as the construction of new facilities and associated access roads, such as the proposed Kelly Ridge and Shadow Ridge campgrounds, the Sunset Point Observation Site, the relocated Dam Overlook Site, and recreation trails. Other activities affecting forest land would occur in areas adjacent to existing facilities such as the New Bullards Bar Dam and the Log Cabin and Our House Diversion Dams. Impacts near these facilities would be generally confined to their immediate vicinity. As has been noted, the YRDP construction sites would be on land zoned RPR by Yuba County. The RPR zone allows for the development of recreation facilities. As noted, none of the TP-zoned lands near New Bullards Bar Reservoir would be affected by YRDP construction activities. For the area around the Our House Diversion Dam, the zoning by Sierra County is GF, which allows for public utility distribution facilities.

As described in Chapter 2, Project Description, rehabilitation of Primary YRDP Roads and Trails would occur. Portions of the access roads where rehabilitation would occur, along the perimeter of the existing road, may require tree removal, although the extent of this removal is not known at this time. The amount of forest land that would be lost or converted is expected to be minimal,

since it is not anticipated that road rehabilitation would not require additional land that is currently forest land.

Yuba Water would apply the provisions of the *Transportation System Management Plan* and the *Integrated Vegetation Management Plan* in the maintenance of these roads. The *Transportation System Management Plan* states that only trees along roads in National Forest lands that pose a danger would be removed. The *Integrated Vegetation Management Plan* applies hazard tree management to Yuba Water facilities on both National Forest and other lands. Following construction activities, the roads and trails would be maintained as necessary, and it is anticipated that vegetation and trees along the road perimeter that are removed for the projects would eventually become re-established as part of the contiguous forest land.

As noted in Chapter 2, Project Description, the 0.77-mile access road to the former Burnt Bridge Campground site would be removed as a YRDP Recreation Road, as part of the FERC Boundary adjustment. The road is on Forest Service land. It is not known at this time what the disposition of this road would be, although one possibility is removal of the road and restoration of the road corridor to a natural condition, which could increase the number of trees in the area. This would be a positive environmental impact. This would be a future subject of discussion between Yuba Water and the Forest Service; further discussion of this item would be speculative. Yuba County has large expanses of forestland – approximately 95,000 acres according to the most recent information available (Yuba County 2011a) The proposed YRDP construction would have possible impacts on approximately 315.2 acres of forest - representing an approximate loss of 0.33 percent of forestlands in Yuba County. Therefore, the amount of forestland converted as a result of YRDP construction would not be significant in relation to the overall amount of available forestland in Yuba County. Additionally, as noted, the projects would not affect land zoned TP, nor would it affect existing uses of forestlands adjacent to the project sites.

In short, YRDP construction activities would have only a minimal effect on forest lands. Therefore, YRDP construction impacts relating to loss or direct conversion of forest land would be **less than significant**. No CEQA mitigation would be required.

YRDP Impact AG-PP-8: Operational Impacts on Loss or Conversion of Forest Land

As noted, there would be no zoning conflicts with forest resources, as most work would occur at existing facilities, and the RPR designation allows for development of the proposed new recreation facilities at New Bullards Bar Reservoir. YRDP operations would not lead to substantial loss or conversion of forest land; impacts would mainly come from construction. Therefore, YRDP operational activities related to loss or direct conversion of forest land would be **less than significant**, and no CEQA mitigation is required.

YRDP Impact AG-PP-9: Construction Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

As noted, there is no Farmland present within the areas upstream of Englebright Dam. Also as noted, most of the area is zoned by Yuba County as RPR, with some areas zoned TP and AG-20. Construction impacts, which are described above, would be confined to the construction sites.

Therefore, YRDP construction impacts relating to changes leading to conversion of Farmland or forest land would be **less than significant**. No CEQA mitigation would be required.

YRDP Impact AG-PP-10: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Operations of proposed YRDP facilities, including the recreation facilities, are not expected to encourage further development that may lead to the conversion of forest land. The existing water system serving the existing recreation facilities would be extended, but only to serve the new recreation facilities.

Proposed YRDP water supply operations could potentially impact agriculture downstream by changing the availability and temperature of water supplied to the Yuba Water Member Units. However, as explained in Chapter 5, Surface Water Resources, and Chapter 6, Groundwater Resources, the Proposed YRDP Project would not increase or exacerbate surface water supply shortages such that increases in groundwater pumping would result in groundwater falling below local management levels. Additionally, as explained in Chapter 8, Surface Water Quality, the Proposed YRDP Project would not result in substantial changes in water temperatures that would adversely affect downstream rice production.

Therefore, the Proposed YRDP Project operations would not result in substantial changes leading to conversion of Farmland or forest land, and this impact would be **less than significant**. No CEQA mitigation is required.

Narrows Impact AG-PP-1: Operational Impacts on Conversion of Farmland

There is no Farmland as defined by CEQA Guidelines Appendix G present within the Narrows Project area or adjacent areas, according to the FMMP map (see Figure 21.2-1). Narrows Project operations would not affect any land uses in the area. Therefore, Narrows Project operational activities would have **no impact** related to direct conversion of Farmland, and no CEQA mitigation would be required.

Narrows Impact AG-PP-2: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As noted, zoning on the Yuba County side of the Narrows project area is RPR and AG-20, and zoning on the Nevada County side is AG-40. Narrows Project operations would not affect any land uses in the area; therefore, operations would not affect lands in the area that are agriculturally zoned. No land under Williamson Act contracts were identified in the area (see Figure 21.3-1), so no Williamson Act lands would be affected. Narrows Project operational impacts on agricultural zoning or Williamson Act lands would be **less than significant**. No CEQA mitigation would be required.

Narrows Impact AG-PP-3: Operational Impacts on Zoning of Forest Land

The only zoning for forest land is in the Yuba County portion, where land has been zoned RPR. There are no lands zoned TP (Yuba County) or TPZ (Nevada County) that designate timber production areas in the vicinity. Narrows Project operations would not affect any land uses in the

area, including the land zoned RPR. Therefore, Narrows Project operational impacts on zoning of forest land would be **less than significant**. No CEQA mitigation would be required.

Narrows Impact AG-PP-4: Operational Impacts on Loss or Conversion of Forest Land

As noted, Narrows Project operations would not affect land uses in the area, including lands zoned RPR in Yuba County and AG-40 in Nevada County, which allow for forest land uses. In addition, as noted, there are no lands designated for timber production in the area. Therefore, Narrows Project operational impacts on loss or direct conversion of forest land would be **less than significant**. No CEQA mitigation would be required.

Narrows Impact AG-PP-5: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

The Proposed Narrows Project would not significantly change existing Narrows Project operations. As explained in Chapter 5, Surface Water Resources, under the Proposed Narrows Project, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet the Proposed YRDP Project requirements, but the Proposed Narrows Project does not include additional flow requirements. As a result, there would be negligible agricultural water supply-related impacts or changes to forest land attributable to the Proposed Narrows Project. Therefore, Narrows Project operational impacts resulting in other changes leading to conversion of Farmland or forest land would be **less than significant**. No CEQA mitigation is required.

21.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact AG-Alt1-1: Construction Impacts on Farmland

Alternative 1 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-1. Alternative 1 YRDP construction would have **no impact** related to direct conversion of Farmland.

YRDP Impact AG-Alt1-2: Operational Impacts on Farmland

As noted, there is no agricultural land present within the areas upstream of Englebright Dam, and there is no land designated as Farmland as defined by CEQA Guidelines Appendix G or Important Farmland as defined by the FMMP. Therefore, YRDP operations under Alternative 1 would have **no impact** related to direct conversion of Farmland.

YRDP Impact AG-Alt1-3: Construction Impacts on Agricultural Zoning and Williamson Act Lands

Alternative 1 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-3. Alternative 1 YRDP construction activities would have **no impact** related to conflicts with agricultural zoning or Williamson Act contracts.

YRDP Impact AG-Alt1-4: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As noted, there would be no zoning conflicts with agricultural resources, as no agricultural zones would be affected. As noted, Yuba County does not participate in the Williamson Act land conservation program, so no lands have Williamson Act contracts. Therefore, Alternative 1 YRDP operations would have **no impact** related to conflicts with agricultural zoning or Williamson Act contracts.

YRDP Impact AG-Alt1-5: Construction Impacts on Zoning of Forest Land

Alternative 1 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-5. Alternative 1 YRDP construction impacts would be **less than significant.**

YRDP Impact AG-Alt1-6: Operational Impacts on Zoning of Forest Land

As noted, there would be no zoning conflicts with forest resources, as most work would occur at existing facilities, and the RPR designation allows for development of the proposed new recreation facilities. Therefore, Alternative 1 YRDP operational activities related to zoning of forest land would be **less than significant**.

YRDP Impact AG-Alt1-7: Construction Impacts on Loss or Conversion of Forest Land

Alternative 1 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-7. Alternative 1 YRDP construction impacts would be **less than significant.**

YRDP Impact AG-Alt1-8: Operational Impacts on Loss or Conversion of Forest Land

As noted, there would be no zoning conflicts with forest resources, as most work would occur at existing facilities, and the RPR designation allows for development of the proposed new recreation facilities at New Bullards Bar Reservoir. Alternative 1 YRDP operations would not lead to substantial loss or conversion of forest land; impacts would mainly come from construction. Therefore, Alternative 1 YRDP operational activities related to loss or direct conversion of forest land would be **less than significant**.

YRDP Impact AG-Alt1-9: Construction Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Alternative 1 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-9. Alternative 1 YRDP construction impacts relating to other changes leading to conversion of Farmland or forest land would be **less than significant**.

YRDP Impact AG-Alt1-10: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Under Alternative 1, operations of proposed YRDP facilities, including the recreation facilities, are not expected to encourage further development that may lead to the conversion of forest land. The existing water system serving the existing recreation facilities would be extended, but only to serve the new recreation facilities.

Alternative 1 YRDP water supply operations could potentially impact agriculture downstream by changing the availability and temperature of water supplied to the Yuba Water Member Units. However, as explained in Chapter 5, Surface Water Resources, and Chapter 6, Groundwater Resources, Alternative 1 would not increase or exacerbate surface water supply shortages such that increases in groundwater pumping would result in groundwater falling below local management levels. Additionally, as explained in Chapter 8, Surface Water Quality, Alternative 1 would not result in substantial changes in water temperatures that would adversely affect downstream rice production.

Therefore, Alternative 1 YRDP operations would not result in substantial changes leading to conversion of Farmland or forest land, and this impact would be **less than significant**.

Narrows Impact AG-Alt1-1: Operational Impacts on Conversion of Farmland

There is no Farmland as defined by CEQA Guidelines Appendix G present within the Narrows Project area or adjacent areas, according to the FMMP map (see Figure 21.2-1). Narrows Project operations under Alternative 1 would not affect any land uses in the area. Therefore, Alternative 1 Narrows Project operational activities would have **no impact** related to the direct conversion of Farmland.

Narrows Impact AG-Alt1-2: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As noted, zoning on the Yuba County side of the Narrows project area is RPR and AG-20, and zoning on the Nevada County side is AG-40. Alternative 1 Narrows Project operations would not affect any land uses in the area; therefore, operations would not affect lands in the area that are agriculturally zoned. No land under Williamson Act contracts were identified in the area (see Figure 21.3-1), so no Williamson Act lands would be affected. Alternative 1 Narrows Project operational impacts on agricultural zoning or Williamson Act lands would be **less than significant**.

Narrows Impact AG-Alt1-3: Operational Impacts on Zoning of Forest Land

The only zoning for forest land is in the Yuba County portion, where land has been zoned RPR. There are no lands zoned TP (Yuba County) or TPZ (Nevada County) that designate timber production areas in the vicinity. Alternative 1 Narrows Project operations would not affect any land uses in the area, including the land zoned RPR. Therefore, Alternative 1 Narrows Project operational impacts on zoning of forest land would be **less than significant**.

Narrows Impact AG-Alt1-4: Operational Impacts on Loss or Conversion of Forest Land

As noted, Alternative 1 Narrows Project operations would not affect land uses in the area, including lands zoned RPR in Yuba County and AG-40 in Nevada County, which allow for forest land uses. In addition, as noted, there are no lands designated for timber production in the area. Therefore, Alternative 1 Narrows Project operational impacts on loss or direct conversion of forest land would be **less than significant**.

Narrows Impact AG-Alt1-5: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Narrows Project operations under Alternative 1 would not significantly change existing Narrows Project operations. As explained in Chapter 5, Surface Water Resources, under Alternative 1, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but Alternative 1 does not include additional Narrows Project flow requirements. As a result, there would be negligible agricultural water supply-related impacts or changes to forest land attributable to Alternative 1 Narrows Project operations. Therefore, Alternative 1 Narrows Project operational impacts resulting in other changes leading to conversion of Farmland or forest land would be **less than significant**.

21.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact AG-Alt2-1: Construction Impacts on Conversion of Farmland

Alternative 2 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-1. Alternative 2 YRDP construction would have **no impact** related to direct conversion of Farmland.

YRDP Impact AG-Alt2-2: Operational Impacts on Conversion of Farmland

As noted, there is no agricultural land present within the areas upstream of Englebright Dam, and there is no land designated as Farmland as defined by CEQA Guidelines Appendix G or Important Farmland as defined by the FMMP. Therefore, YRDP operations under Alternative 2 would have **no impact** related to direct conversion of Farmland.

YRDP Impact AG-Alt2-3: Construction Impacts on Agricultural Zoning and Williamson Act Lands

Alternative 2 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-3. Alternative 2 YRDP construction activities would have **no impact** related to conflicts with agricultural zoning or Williamson Act contracts.

YRDP Impact AG-Alt2-4: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As noted, there would be no zoning conflicts with agricultural resources, as no agricultural zones would be affected. As noted, Yuba County does not participate in the Williamson Act land conservation program, so no lands have Williamson Act contracts. Therefore, Alternative 2 YRDP

operations would have **no impact** related to conflicts with agricultural zoning or Williamson Act contracts.

YRDP Impact AG-Alt2-5: Construction Impacts on Zoning of Forest Land

Alternative 2 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-5. Alternative 2 YRDP construction impacts would be **less than significant.**

YRDP Impact AG-Alt2-6: Operational Impacts on Zoning of Forest Land

As noted, there would be no zoning conflicts with forest resources, as most work would occur at existing facilities, and the RPR designation allows for development of the proposed new recreation facilities. Therefore, Alternative 2 YRDP operational activities related to zoning of forest land would be **less than significant**.

YRDP Impact AG-Alt2-7: Construction Impacts on Loss or Conversion of Forest Land

Alternative 2 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-7. Alternative 2 YRDP construction impacts would be **less than significant.**

YRDP Impact AG-Alt2-8: Operational Impacts on Loss or Conversion of Forest Land

As noted, there would be no zoning conflicts with forest resources, as most work would occur at existing facilities, and the RPR designation allows for development of the proposed new recreation facilities at New Bullards Bar Reservoir. Alternative 2 YRDP operations would not lead to substantial loss or conversion of forest land; impacts would mainly come from construction. Therefore, Alternative 2 YRDP operational activities related to loss or direct conversion of forest land would be **less than significant**.

YRDP Impact AG-Alt2-9: Construction Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Alternative 2 YRDP construction activities would be the same as those described for the YRDP relicensing under the Proposed Projects and would therefore have the same impacts described above for YRDP Impact AG-PP-9. Alternative 2 YRDP construction impacts relating to other changes leading to conversion of Farmland or forest land would be **less than significant**.

YRDP Impact AG-Alt2-10: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Under Alternative 2, operations of proposed YRDP facilities, including the recreation facilities, are not expected to encourage further development that may lead to the conversion of forest land. The existing water system serving the existing recreation facilities would be extended, but only to serve the new recreation facilities.

Alternative 2 YRDP water supply operations could potentially impact agriculture downstream by changing the availability and temperature of water supplied to the Yuba Water Member Units. As explained in Chapter 5, Surface Water Resources, Alternative 2 would substantially increase and exacerbate surface water supply shortages, requiring a significant increase in the frequency and magnitude of groundwater pumping. Although fallowing could occur, that possibility is speculative because the decision to fallow is made by individual farmers based on a multitude of factors including the value of the crop, the cost of groundwater pumping, and the availability of groundwater. As explained in Chapter 6, Groundwater Resources, the analysis assumed that, regardless of existing pumping capacity, additional groundwater pumping would occur in response to surface water shortages because additional groundwater production wells could be installed to meet the demand. Thus, although there would be significant surface and groundwater impacts, as disclosed in previous chapters, Alternative 2 YRDP operations would not lead to significant downstream conversion of farmland due to changes in flows.

Additionally, as explained in Chapter 8, Surface Water Quality, Alternative 2 would result in similar or slightly cooler water temperatures from November to April, and warmer temperatures from May to October. Warmer temperatures would occur during the rice-growing season and would not result in a substantial adverse effect to rice production.

Therefore, Alternative 2 YRDP operations would not result in substantial changes leading to significant conversion of Farmland or forest land, and this impact would be **less than significant**.

Narrows Impact AG-Alt2-1: Operational Impacts on Conversion of Farmland and Agricultural Zoning

There is no Farmland as defined by CEQA Guidelines Appendix G present within the Narrows Project area or adjacent areas, according to the FMMP map (see Figure 21.2-1). Narrows Project operations under Alternative 2 would not affect any land uses in the area. Therefore, Alternative 2 Narrows Project operational activities would have **no impact** related to the direct conversion of Farmland.

Narrows Impact AG-Alt2-2: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As noted, zoning on the Yuba County side of the Narrows project area is RPR and AG-20, and zoning on the Nevada County side is AG-40. Alternative 2 Narrows Project operations would not affect any land uses in the area; therefore, operations would not affect lands in the area that are agriculturally zoned. No land under Williamson Act contracts were identified in the area (see Figure 21.3-1), so no Williamson Act lands would be affected. Alternative 2 Narrows Project operational impacts on agricultural zoning or Williamson Act lands would be **less than significant**.

Narrows Impact AG-Alt2-3: Operational Impacts on Zoning of Forest Land

The only zoning for forest land is in the Yuba County portion, where land has been zoned RPR. There are no lands zoned TP (Yuba County) or TPZ (Nevada County) that designate timber production areas in the vicinity. Alternative 2 Narrows Project operations would not affect any

land uses in the area, including the land zoned RPR. Therefore, Alternative 2 Narrows Project operational impacts on zoning of forest land would be **less than significant**.

Narrows Impact AG-Alt2-4: Operational Impacts on Loss or Conversion of Forest Land

As noted, Alternative 2 Narrows Project operations would not affect land uses in the area, including lands zoned RPR in Yuba County and AG-40 in Nevada County, which allow for forest land uses. In addition, as noted, there are no lands designated for timber production in the area. Therefore, Alternative 2 Narrows Project operational impacts on loss or direct conversion of forest land would be **less than significant**.

Narrows Impact AG-Alt2-5: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

As explained in Chapter 5, Surface Water Resources, under Alternative 2, Yuba Water would continue to operate the Narrows 1 Powerhouse in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements, but Alternative 2 does not include additional Narrows Project flow requirements. As a result, there would be negligible agricultural water supply-related impacts or changes to forest land attributable to Alternative 2 Narrows Project operations. Therefore, Alternative 2 Narrows Project operational impacts resulting in other changes leading to conversion of Farmland or forest land would be **less than significant**.

21.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact AG-NP-1: Construction Impacts on Conversion of Farmland

No YRDP construction work would occur under the No Project Alternative. Therefore, YRDP construction would have **no impact** on Farmland conversion.

YRDP Impact AG-NP-2: Operational Impacts on Conversion of Farmland

As discussed under YRDP Impact AG-PP-2, there is no designated Farmland in the areas upstream of Englebright Dam. Therefore, YRDP operations would have **no impact** on Farmland conversion.

YRDP Impact AG-NP-3: Construction Impacts on Agricultural Zoning and Williamson Act Lands

No YRDP construction work would occur under the No Project Alternative. Therefore, YRDP construction would have **no impact** on agricultural zoning and Williamson Act lands.

YRDP Impact AG-NP-4: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As previously noted, although there are lands with agricultural zoning in the vicinity, none of these lands would be affected by YRDP operations. There are no Williamson Act lands in the Project Area. YRDP operations would have **no impact** on agricultural zoning or Williamson Act lands.

YRDP Impact AG-NP-5: Construction Impacts on Zoning of Forest Land

No YRDP construction work would occur under the No Project Alternative. Therefore, YRDP construction would have **no impact** on zoning of forest land.

YRDP Impact AG-NP-6: Operational Impacts on Zoning of Forest Land

As previously noted, although there are lands with RPR zoning in the vicinity, none of these lands would be affected by YRDP operations. YRDP operations would have **no impact** on zoning of forest land.

YRDP Impact AG-NP-7: Construction Impacts on Loss or Conversion of Forest Land

No YRDP construction work would occur under the No Project Alternative. Therefore, YRDP construction would have **no impact** regarding loss or conversion of forest land.

YRDP Impact AG-NP-8: Operational Impacts on Loss or Conversion of Forest Land

As previously noted, although there are lands with RPR zoning in the vicinity, none of these lands would be affected by YRDP operations. Impacts on forest land would be confined to potential construction activities, which are discussed under YRDP Impact AG-NP-7. YRDP operations under the No Project Alternative would have **no impact** on loss or conversion of forest land.

YRDP Impact AG-NP-9: Construction Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

No YRDP construction work would occur under the No Project Alternative. Therefore, YRDP construction would have **no impact** on Farmland conversion, either directly or through other changes.

YRDP Impact AG-NP-10: Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

YRDP operations would generally be the same under the No Project Alternative as under the Existing Condition, except for the discontinuation of hydropower generation. However, this operational change would not substantially alter flows such that water temperatures or the delivery of water to the Member Units would be affected. As noted in the impact discussion above, operational activities would have no impact on agricultural lands in the Project Area. There is no Farmland present in the areas upstream of Englebright Dam. Operations of existing YRDP facilities, including the recreation facilities, are not expected to encourage further development that may lead to the conversion of forest land. Therefore, YRDP operations under the No Project Alternative would not result in other changes leading to conversion of Farmland or forest land, and this impact would be **less than significant**.

Narrows Impact AG-NP-1: Operational Impacts on Conversion of Farmland and Agricultural Zoning

As discussed under Narrows Impact AG-PP-1, there is no Farmland as defined by CEQA Guidelines Appendix G present within the Narrows Project area or adjacent areas, according to the FMMP map (see Figure 21.2-1). Narrows Project operations would not affect any land uses in the area. Therefore, Narrows Project operations under the No Project Alternative would have **no impact** on conversion of Farmland.

Narrows Impact AG-NP-2: Operational Impacts on Agricultural Zoning and Williamson Act Lands

As discussed under Narrows Impact AG-PP-2. Narrows Project operations would not affect any land uses in the area; therefore, operations would not affect lands in the area that are agriculturally zoned. No Williamson Act lands would be affected. Narrows Project operations under the No Project Alternative would have **no impact** on agricultural zoning or Williamson Act lands.

Narrows Impact AG-NP-3: Operational Impacts on Zoning of Forest Land

As noted under Narrows Impact AG-PP-3, there are no lands zoned TP (Yuba County) or TPZ (Nevada County) that designate timber production areas in the vicinity. Narrows Project operations would not affect any land uses in the area, including the land zoned RPR. Therefore, Narrows Project operations under the No Project Alternative would have **no impact** on zoning of forest land.

Narrows Impact AG-NP-4: Operational Impacts on Loss or Conversion of Forest Land

As noted under Narrows Impact AG-PP-4. Narrows Project operations would not affect land uses in the area, including lands zoned RPR, which allow for forest land uses. In addition, there is no land designated for timber production in the area. Therefore, Narrows Project operations under the No Project Alternative would have **no impact** on loss or conversion of forest land.

Narrows Impact AG-NP-5: Operational Impacts on Indirect Resulting in Other Changes Leading to Conversion of Farmland or Forest Land

Narrows Project operations would generally be the same under the No Project Alternative as under the Existing Condition, except for the discontinuation of hydropower generation. However, this operational change would not substantially alter flows such that water temperatures or the delivery of water to the Member Units would be affected. Therefore, Narrows Project operations under the No Project Alternative would not result in other changes leading to conversion of Farmland or forest land, and this impact would be **less than significant**.

21.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other

current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)).

The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

21.6.1 Cumulative Condition

Projects listed in Table 4.9-1 in Chapter 4 are mostly within the Yuba River watershed, although a few projects are located outside the watershed boundary. However, because the potentially significant impacts would occur mainly to agricultural and forest lands within the Yuba River watershed, the geographical scope of the cumulative impact analysis would be the watershed. Only those projects that could affect agricultural and forest land described in this chapter are included in the qualitative evaluation that is presented in subsequent sections of this chapter:

FERC Hydropower Projects in the Yuba River Watershed

- *Yuba-Bear Hydroelectric Project*
- *Upper Drum-Spaulding Hydroelectric Project*
- *Lower Drum Hydroelectric Project*

Water Storage and Conveyance Projects

- *ARC Spillway Project*
- *USACE New Bullards Bar Dam and Reservoir WCM Update*
- *Wheatland Water District In-Lieu Recharge Project*
- *Various Water Supply Improvement Projects*

Water Transfer and Acquisition Programs

- *Lower Yuba River Accord Water Transfer Program Extension*

Ecosystem Restoration and Fisheries Improvement Projects

- *North Yuba Forest Partnership*
- *Yuba Foothills Healthy Forest Project*
- *Upper Yuba Headwaters Forest Restoration Project*
- *'Inimim Forest Restoration Project*
- *Healthy Rivers and Landscapes Program*

Other Local Projects in the Yuba Region

- *Yuba River Resilience Initiative*
- *Yuba County Integrated Regional Water Management Plan (IRWMP) Implementation*
- *Hallwood/Cordua Canal Fish Screen Return Line Replacement*

These projects are described in Chapter 4, and their impacts related to agriculture and forestry resources are qualitatively addressed below.

21.6.2 Cumulative Condition with Proposed Projects compared to the Existing Condition

The FERC hydropower projects, like the Proposed Projects, would involve relicensing of hydropower facilities. NID is applying for relicensing of the Yuba-Bear Project, while PG&E is applying for relicensing of the Drum-Spaulding projects. The Yuba-Bear relicensing would involve some changes in operations that would affect minimum streamflows, spills from project canals and conduits, and the rate of flow fluctuations following spill events. It also would involve the construction of new facilities such as a new powerhouse and new or rehabilitated recreation facilities. The Drum-Spaulding relicensing would involve the same changes in operations as the Yuba-Bear relicensing, with additional changes specific to Spaulding Dam, Lake Valley Dam, and Drum Canal. This relicensing would also involve new or rehabilitated recreation facilities, as well as the retirement of one powerhouse and the removal of a diversion and associated conveyance system. Land uses in the vicinity of the YB/DS projects include general agriculture, residential agriculture, forest, residential forest, forest recreation, and timberland production zones among others (FERC 2014).

The FEIS analyzed the potential impacts of the YB/DS relicensing projects on the land uses identified in the vicinity, including agriculture and forestry uses. It did not identify any significant impact on these lands. Impacts were confined mainly in the area of existing facilities, and both existing and new facilities would be subject to an Integrated Vegetation Management Plan that would address vegetation management, including tree removal (FERC 2014). Based on this, the YB/DS relicensing projects would not have a significant impact on agricultural or forest lands.

Other projects listed in Table 4.9-1 could have direct impacts on forest lands. For example, construction of the ARC Spillway would disturb approximately 40 acres of forest land, much of which would be permanently removed within the footprint of the ARC Spillway, relocated Overlook Site and Marysville Road, soil and rock disposal area, and new downstream access road (YCWA 2023). This loss of forest land, assuming a maximum loss of 40 acres would represent a loss of less than 0.04 percent of the total 95,000 acres of forest land in Yuba County, based on latest available information. It should be noted that the ARC Spillway, which was analyzed in a separate EIR, would provide long-term benefits to the surrounding forest land by providing increased protection from future flood damage (YCWA 2023).

The WCM Update could potentially change water releases from New Bullards Bar Reservoir, as the WCM governs the water storage and release schedule. As described in Table 4.9-1, the revised WCM will govern water releases during, and in anticipation of, floods, major storms, and high-water events. More specific information on the volume and pattern of these releases is currently not available. However, these changes relate to flood control releases during and after storms, which would occur mostly outside the irrigation season. The changes are not expected to inhibit Yuba Water's deliveries to its Member Units downstream, so the WCM Update would not affect agricultural land use.

Many projects listed in Table 4.9-1 are forest restoration projects that would have beneficial effects on forest land and timber land. Projects involving forest restoration, such as the North Yuba Forest Partnership, Yuba Foothills Healthy Forest Project, the 'Inimim Forest Restoration Project, and the Upper Yuba Headwaters Forest Restoration Project would preserve the long-term viability of timber producing forestlands by reducing fire risk and restoring disturbed habitats. These projects would not have any cumulatively considerable negative impacts on forest lands that could compound with any potential impacts resulting from the Proposed Projects. Furthermore, the Proposed Projects would not preclude the implementation of any forest restoration projects or limit any anticipated positive impacts from these projects.

Many of the projects listed in Table 4.9-1 for the Lower Yuba River are habitat restoration projects that would have minimal, if any, impacts on agricultural and forestry resources. The goal of these projects is to enhance the resiliency of fisheries and aquatic conditions along the lower Yuba River. This is also the goal of projects such as the Yuba River Resilience Initiative and the Lower Yuba River Accord. The latter project involves a use agreement that includes the Yuba Water Member Units, which primarily serve agricultural customers. Projects like the water storage and conveyance projects, the Yuba County IRWMP Implementation, the Wheatland Water District In-Lieu Recharge Project, and the various water supply improvement projects are designed to make the water supply more reliable to meet the County's needs, including for agriculture.

As discussed in this chapter, there is no Farmland located in the areas upstream of Englebright Dam. Forest lands would be the main resources potentially affected by these projects. As noted above, the forest restoration projects would preserve the long-term viability of timber producing forestlands. There is limited forest land in the lower Yuba River area. As noted, projects in that area would mostly improve water supply delivery or would reduce impacts of deliveries on the river. As discussed in this chapter, the main concerns focus on releases of water from upstream that could affect availability of water for Member Units and water temperature. The projects in the lower Yuba River area would have no significant effect on these issues, and therefore on agricultural lands that use water from the Yuba River.

As discussed in this chapter, the Proposed Projects would not result in any significant impacts to agricultural or forest lands. Overall, the cumulative effects of the cumulative past, present, and projects, along with the Proposed Projects, are not expected to have significant impacts on agricultural and forestry resources or compound with the Proposed Projects or alternatives in any significant way, when compared to the Existing Condition. Under the Cumulative Condition, the cumulative impact on agriculture and forestry resources would be less than significant.

YRDP Cumulative Impact AG-PP-1: Cumulative Impacts on Agricultural and Forestry Resources

As explained above, under the Cumulative Condition, including the Proposed Projects, the cumulative impact on agriculture and forestry resources would be less than significant. Therefore, the Proposed YRDP Project would have a **less than significant cumulative impact** on agriculture and forestry resources.

Narrows Cumulative Impact AG-PP-1: Cumulative Impacts on Agricultural and Forestry Resources

As explained above, under the Cumulative Condition, including the Proposed Projects, the cumulative impact on agriculture and forestry resources would be less than significant. Therefore, the Proposed Narrows Project would have a **less than significant cumulative impact** on agriculture and forestry resources.

21.6.3 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on agriculture and forestry resources are listed in the Cumulative Condition section above. No additional projects are applicable. As such, the Cumulative Condition under which Alternative 1 is analyzed is the same as under which the Proposed Projects are analyzed. As explained in the individual project impact analysis above, Alternative 1 would not result in any significant impacts to agriculture and forestry resources. Accordingly, and for the reasons explained in Section 21.6.2 above, under the Cumulative Condition, including Alternative 1, the cumulative impacts to agriculture and forestry resources would be less than significant.

YRDP Cumulative Impact AG-Alt1-1: Cumulative Impacts on Agricultural and Forestry Resources

As explained above, under the Cumulative Condition, including Alternative 1, the cumulative impact on agriculture and forestry resources would be less than significant. Therefore, the YRDP under Alternative 1 would have a **less than significant cumulative impact** on agriculture and forestry resources.

Narrows Cumulative Impact AG-Alt1-1: Cumulative Impacts on Agricultural and Forestry Resources

As explained above, under the Cumulative Condition, including Alternative 1, the cumulative impact on agriculture and forestry resources would be less than significant. Therefore, Narrows Project operations under Alternative 1 would have a **less than significant cumulative impact** on agriculture and forestry resources.

21.6.4 Cumulative Condition with Alternative 2 compared to the Existing Condition

The Alternative 2 Cumulative Condition includes most of the Projects identified in Section 21.6.1 except for the Healthy Rivers and Landscapes program, as explained in Chapter 5, Surface Water Resources. As explained in the individual project analysis above, Alternative 2 would not result in significant impacts to agriculture and forestry resources. For the same reasons discussed in Section 21.6.2, the cumulative past, present, and future projects would not combine with the less than significant Alternative 2 impacts to create a significant cumulative impact. Accordingly, under the Cumulative Condition, including Alternative 2, the cumulative impact to agriculture and forestry resources would be less than significant.

YRDP Cumulative Impact AG-Alt2-1: Cumulative Impacts on Agricultural and Forestry Resources

As explained above, under the Cumulative Condition, including Alternative 2, the cumulative impact on agriculture and forestry resources would be less than significant. Therefore, the YRDP under Alternative 2 would have a **less than significant cumulative impact** on agriculture and forestry resources.

Narrows Cumulative Impact AG-Alt2-1: Cumulative Impacts on Agricultural and Forestry Resources

As explained above, under the Cumulative Condition, including Alternative 2, the cumulative impact on agriculture and forestry resources would be less than significant. Therefore, Narrows Project operations under Alternative 2 would have a **less than significant cumulative impact** on agriculture and forestry resources.

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CHAPTER 22

LAND USE AND PLANNING

22.1 Introduction

This section describes the environmental setting and regulatory framework for land use and planning, and it identifies direct, indirect, and cumulative impacts of the Proposed Projects and alternatives during construction and O&M. The land use and planning analysis focuses on land use plans applicable to the Project Area. Emergency response and evacuation plans, along with wildfire risk and hazards plans, are addressed respectively in Chapter 17, Hazards and Hazardous Materials, and Chapter 18, Wildfire. The study area for land use and planning refers to the areas within and directly adjacent to the Project Area.

22.2 Environmental Setting

The Project Area is mostly in Yuba County, with small portions in Nevada County and Sierra County. The area is in the Sierra Nevada foothills and is predominantly rural. A few communities are scattered throughout the area, none of which have a large population. The most significant developments in the area are the New Bullards Bar Reservoir and Englebright Lake, both reservoirs that were created by dams. New Bullards Bar Reservoir is entirely within Yuba County, while Englebright Lake is on the boundary line between Yuba and Nevada Counties.

Predominant land uses in Yuba County include agriculture, timber, extractive/industrial, commercial/research and development, park, public lands, military installations (Beale Air Force Base), and urban/communities. Unincorporated communities located in Yuba County near the Project Area include Camptonville, Challenge, Dobbins, and Oregon House. The predominant land uses in Nevada County include timber, agriculture, and urban/communities. The unincorporated community of Lake Wildwood is located near Englebright Lake. In Sierra County, most land use consists of forest, such as the portion within the Project Area. The unincorporated community of Pike is in the vicinity.

Land in the Project Area consists of mostly federal and Yuba Water lands, along with some State and private lands. Land above 2,000 feet elevation in the Project Area consists of National Forest land, timber company lands (e.g., Sierra Pacific Industries) and other private lands, and lands owned by Yuba Water. Land around facilities below 2,000 feet elevation along the North Yuba, Middle Yuba, and Yuba Rivers to Englebright Lake consists of public land managed by the Corps and the State of California, and private land near urban areas (FERC and USACE 2019).

The Forest Service manages two National Forests in the vicinity: the Tahoe National Forest and the Plumas National Forest. The Project Area encompasses portions of the Tahoe National Forest in Yuba and Sierra Counties. Each National Forest is managed in accordance with a LRMP, as discussed below.

The Corps operates Englebright Dam and administers the land adjacent to Englebright Lake. The dam's main purpose is to trap and contain sediment derived from extensive historical hydraulic

mining operations in the Yuba River watershed. Englebright Lake is about nine miles long with a surface area of 815 acres. The dam does not include hydropower facilities.

As noted, Yuba Water owns land within the Project Area. The main features on these lands are New Bullards Bar Reservoir and Dam. As described in Chapter 2, Project Description, New Bullards Bar Reservoir covers approximately 4,790 ac and extends about 15.3 RM upstream on the North Yuba River. The dam, approximately 645 feet high, includes hydropower facilities.

22.3 Regulatory Setting

22.3.1 Federal

22.3.1.1 National Forest Land and Resource Management Plans

The two National Forests, Tahoe and Plumas, that are in the Project Area and vicinity are managed in accordance with their respective LRMPs (see also Chapter 21, Agriculture and Forestry Resources). The plans, developed with public participation, contain two levels of management standards and guidelines: forest-wide and area-specific. Forest-wide goals, objectives, standards, and guidelines apply to all National Forest land within the forest boundaries, and additional standards and guidelines apply to specific management areas of each forest. In addition, the Motorized Travel Management Plans for these National Forests contain management direction and guidelines regarding maintenance of roads on National Forest land.

Tahoe National Forest LRMP

The Tahoe National Forest LRMP was originally adopted in 1990 and intended to direct the management of the National Forest until 2005 (Tahoe National Forest 1990). The LRMP was subsequently amended in 2004 and again in 2011, and it is still used by USFS. The Tahoe National Forest management areas in the vicinity are the Oregon, Forty-Niner, and Bullards Management Areas, all administered by the Yuba River Ranger District based in Camptonville.

The Tahoe National Forest LRMP sets forth management directions that guide planning for on-site projects within the National Forest. Many of these management directions are intended to reduce the potential environmental effects of these projects. The following management directions are applicable to the Proposed Projects (Tahoe National Forest 1990), along with the DEIR chapters that evaluate issues addressed by these directions:

1. Recreation
    - Provide a broad spectrum of dispersed and developed recreation opportunities in accordance with identified needs and demands.
    - Work with cooperating water agencies and irrigation districts to maintain desirable water levels on reservoirs through the entire length of the recreation season.
2. Visual Management – Maintain visual quality at the visual quality objective (VQO) level specified in each management area, as a minimum, but maintain higher visual quality wherever practical and compatible with other goals. [Chapter 12, Visual Resources]

3. Cultural Resources – Provide quality, on-the-ground management of cultural resources and actively maintain the integrity of National Register sites. [Chapter 13, Cultural Resources; Chapter 14, Tribal Cultural Resources]
4. Wildlife and Fish
    - Devote particular attention to preserving habitats for plant and animal species that are associated with mature forest successional stages, riparian areas, hardwoods, and meadows. [Chapter 10, Non-Fisheries Biological Resources]
    - Manage fish and wildlife habitats to maintain viable populations of all vertebrate species. [Chapter 10, Non-Fisheries Biological Resources]
    - Increase cold water fishery production. [Chapter 9, Fisheries]
    - Provide enough quality habitat so that the Forest's sensitive species will not become threatened or endangered. [Chapter 10, Non-Fisheries Biological Resources]
4. Soil, Water, and Riparian Areas
    - Conserve soil and water resources and prevent activities that will significantly or permanently impair the productivity of the land. [Chapter 5, Surface Water Resources; Chapter 16, Geology and Soils]
    - Protect streams, lakes, wetlands, streamside management zones, and other riparian areas. [Chapter 10, Non-Fisheries Biological Resources]
5. Air Quality
    - Manage TNF activities so that air quality meets the standards under Federal, State, and local laws. [Chapter 15, Air Quality]

Plumas National Forest LRMP

The Plumas National Forest LRMP was originally adopted in 1988 and intended to direct the management of the National Forest for the next 10-15 years (Plumas National Forest 1988). Land within the Plumas National Forest is located along the northern arm of New Bullards Bar Reservoir. The LRMP provides a designation for areas based on established priorities for various resources, including wilderness, recreation, wildlife, timber, and visual resources. It allows for land uses by other agencies through permits if compatible with management area direction, use of other lands is not feasible, environmental impacts are mitigated, and the public interest is protected.

As with the Tahoe National Forest LRMP, the Plumas National Forest LRMP contains management directions, many of which are intended to reduce the potential environmental effects of these projects. The following management directions are applicable to the Proposed Projects (Plumas National Forest 1988), along with the DEIR chapters that evaluate issues addressed by these directions:

1. Visual Resources - Maintain high visual quality on lands committed to other uses [i.e., not timber] or readily apparent from recreational developments, major travel routes, and other high use areas. [Chapter 12, Visual Resources]

2. Cultural Resources – Protect or evaluate all significant cultural properties and manage, according to law, all significant cultural properties. Locate and manage/protect important Native American religious and gathering areas and other traditional ethnic uses. [Chapter 13, Cultural Resources; Chapter 14, Tribal Cultural Resources]
3. Wildlife, Fish, and Sensitive Plants - Maintain habitat to support viable populations of all native and desired non-native vertebrate species. Provide habitat leading to viable populations of endangered species. Provide diversity of plant and animal communities and tree species by assuring the continuous and viable presence of all seral stages of all native plant communities occurring on the forest. [Chapter 9, Fisheries; Chapter 10, Non-Fisheries Biological Resources]
4. Riparian Areas - Protect riparian areas and water quality by limiting disturbance in streamside management zones according to ground slope and stability, stream class, channel stability, fishery, and other beneficial uses, and favor riparian-dependent resources in cases of competing resource demands. [Chapter 10, Non-Fisheries Biological Resources]
5. Water - Maintain or improve water quality to protect beneficial uses and meet or exceed State objectives. Reduce sediment yields from watersheds in deteriorating condition and those tributary to eroding channels or hazardous floodprone areas. Avoid water quality degradation by using Best Management Practices during land management activities, and reduce sedimentation, and channel erosion by rehabilitating deteriorating watersheds. [Chapter 5, Surface Water Resources; Chapter 8, Surface Water Quality; Chapter 16, Geology and Soils]
6. Soil - Continue to identify areas subject to significant erosion. loss of organic matter, and compaction damage to prevent or eliminate significant productivity losses associated with them. Allow activities on these areas only to the degree that erosional processes are not materially accelerated. [Chapter 16, Geology and Soils]
7. Geology - In areas identified as susceptible to slope failure, analyze risks of management activities so as to avoid initiation or acceleration of failure and to protect human safety and Forest resources. [Chapter 16, Geology and Soils]
8. Fire and Fuels – Reduce preventable human-caused wildfire. [Chapter 18, Wildfire]

22.3.2 State

22.3.2.1 California Government Code Section 53091

Section 53091 is found in Title 5, Division 2, Part 1, Chapter 1 of the California Government Code. Chapter 1 addresses regulation of local agencies by counties and cities. Per California Government Code 53091(a), each local agency shall comply with all applicable building ordinances and zoning ordinances of the county or city in which the territory of the local agency is situated. The zoning ordinances applicable to the Proposed Projects are described below.

Government Code Section 53091(d) states that building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency. Also, Government

Code Section 53091(e) states that zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy; facilities that are subject to Section 12808.5 of the Public Utilities Code; or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities.

22.3.3 Regional/Local

22.3.3.1 Yuba County General Plan

Yuba County regulates private land use in accordance with the 2030 Yuba County General Plan and County zoning ordinances. The 2030 County General Plan, adopted in 2011 with the Safety and Housing Elements updated in 2021, guides the development of lands in unincorporated Yuba County. It designates land uses and sets forth goals and policies applicable to future development.

The General Plan Land Use Diagram indicates that most of the land in the Project Area is designated Natural Resources, which covers agricultural and forest lands (Figure 22.3-1). For some rural communities, such as Dobbins, Oregon House, Camptonville, and Smartsville, the County General Plan designates these areas as Rural Community.

Several Yuba County General Plan policies have been adopted to avoid or mitigate environmental effects. Policies potentially applicable to the Proposed Projects include the following:

- **Policy NR 5.1.** New developments that could adversely affect special-status species habitat shall conduct a biological resources assessment and identify design solutions that avoid such adverse effects. If, after examining all feasible means to avoid impacts to special-status species through project design, adverse effects cannot be avoided, then impacts shall be mitigated in accordance with guidance from the appropriate state or federal agency charged with the protection of the subject species, including pre-construction surveys conducted according to applicable standards and protocols, where necessary.
- **Policy NR 5.15.** Roads, water lines, sewer lines, drainage facilities, and other public facilities constructed to serve unincorporated County development shall be located and designed to avoid substantial impacts to stream courses, associated riparian areas, and wetlands, to the greatest extent feasible.
- **Policy NR 6.3.** New development, roads, water and sewer lines, and stormwater infrastructure should be located to avoid impacts to significant cultural resources.
- **Policy HS 6.1.** New developments shall implement emission control measures recommended by the Feather River Air Quality Management District for construction, grading, excavation, and demolition, to the maximum extent feasible.

- **Policy HS 8.5.** An erosion and sediment control plan meeting County standards for preventing to increased discharge of sediment is required for:
    - Projects that propose to grade more than ten thousand (10,000) square feet of area having a slope greater than 10 percent;
    - Clearing and grubbing areas of one-ac or more regardless of slope;
    - Projects where more than two thousand five hundred (2,500) square feet will be inadequately protected from erosion during any portion of the rainy season;
    - Projects that involve grading will occur within fifty (50) feet of any watercourse; or
    - Where the County determines that the grading will or may pose a significant erosion, or sediment discharge hazard for any reason.
- **Policy HS 8.6.** Project applicants may be required to show evidence of coverage, or application for coverage, under an NPDES general construction permit and a Storm Water Pollution Prevention Plan (SWPPP) with a State issued W.D.I.D. number, if applicable. Grading activities shall be located and designed to avoid contributing to the violation of provisions of any applicable NPDES stormwater discharge permit.

22.3.3.2 Yuba County Zoning Ordinance

The Yuba County Zoning Ordinance (Yuba County Code Title XI, Division II) is intended to provide a precise guide for the physical development of the County in a manner as to progressively achieve the arrangement of land uses depicted in the Yuba County General Plan, consistent with the goals and policies of the General Plan. The Zoning Ordinance establishes zoning districts that are applied to County parcels. It specifies land uses permitted, conditionally permitted or specifically prohibited in each zoning district, and it sets forth development regulations within each district.

Within the Project Area, the predominant zone is RPR, as noted in Chapter 21, Agriculture and Forestry Resources (Figure 22.3-2). The RPR zone district is primarily located within the natural resources areas of the County, but it is also an allowed zoning designation within rural community districts. Among its purposes, the RPR zone preserves land containing natural or potential parkland for passive recreational activities and nonstructural uses, and it identifies lake recreation areas and provides for use of these areas for active public recreation purposes.

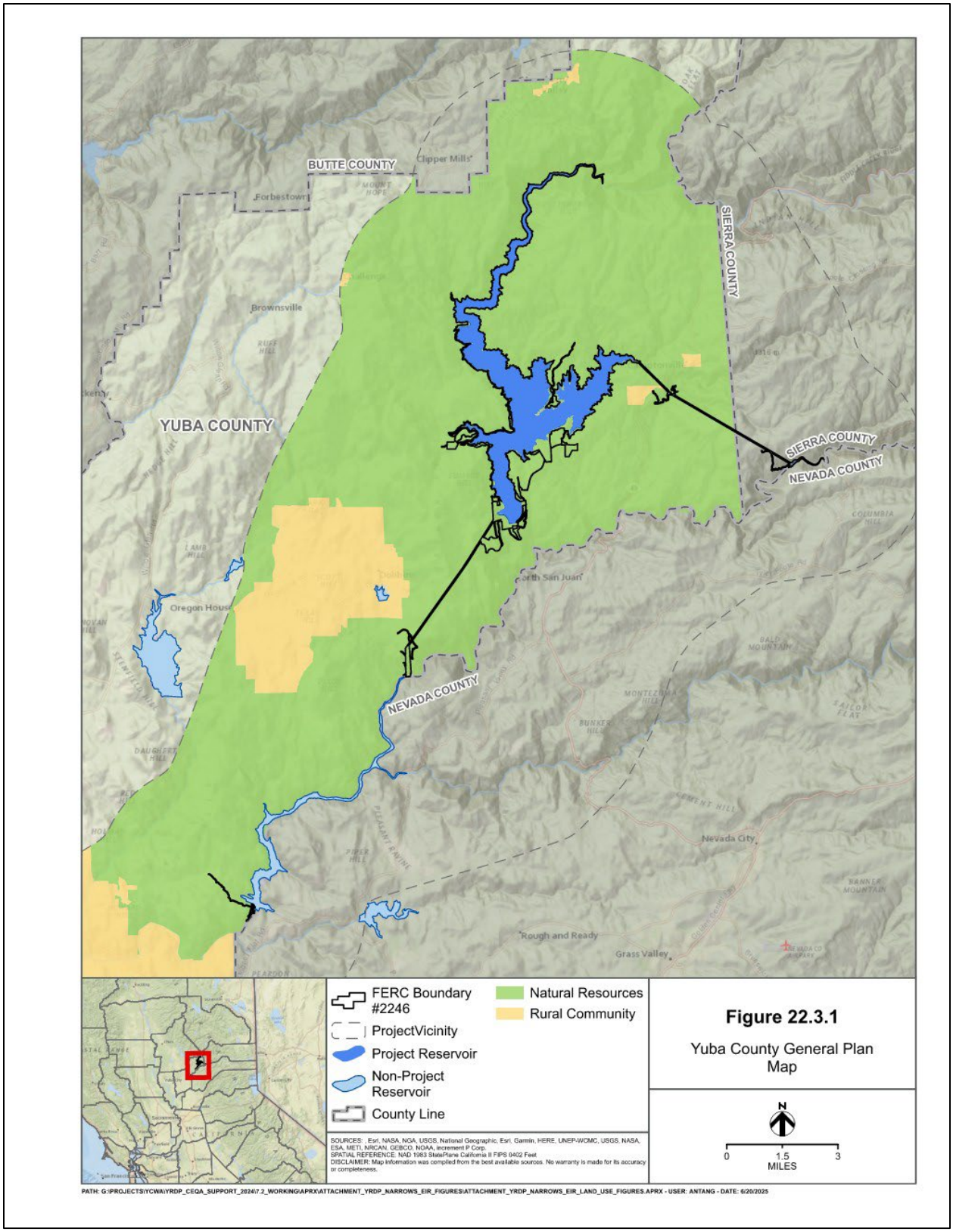

Figure 22.3-1. Yuba County General Plan Map

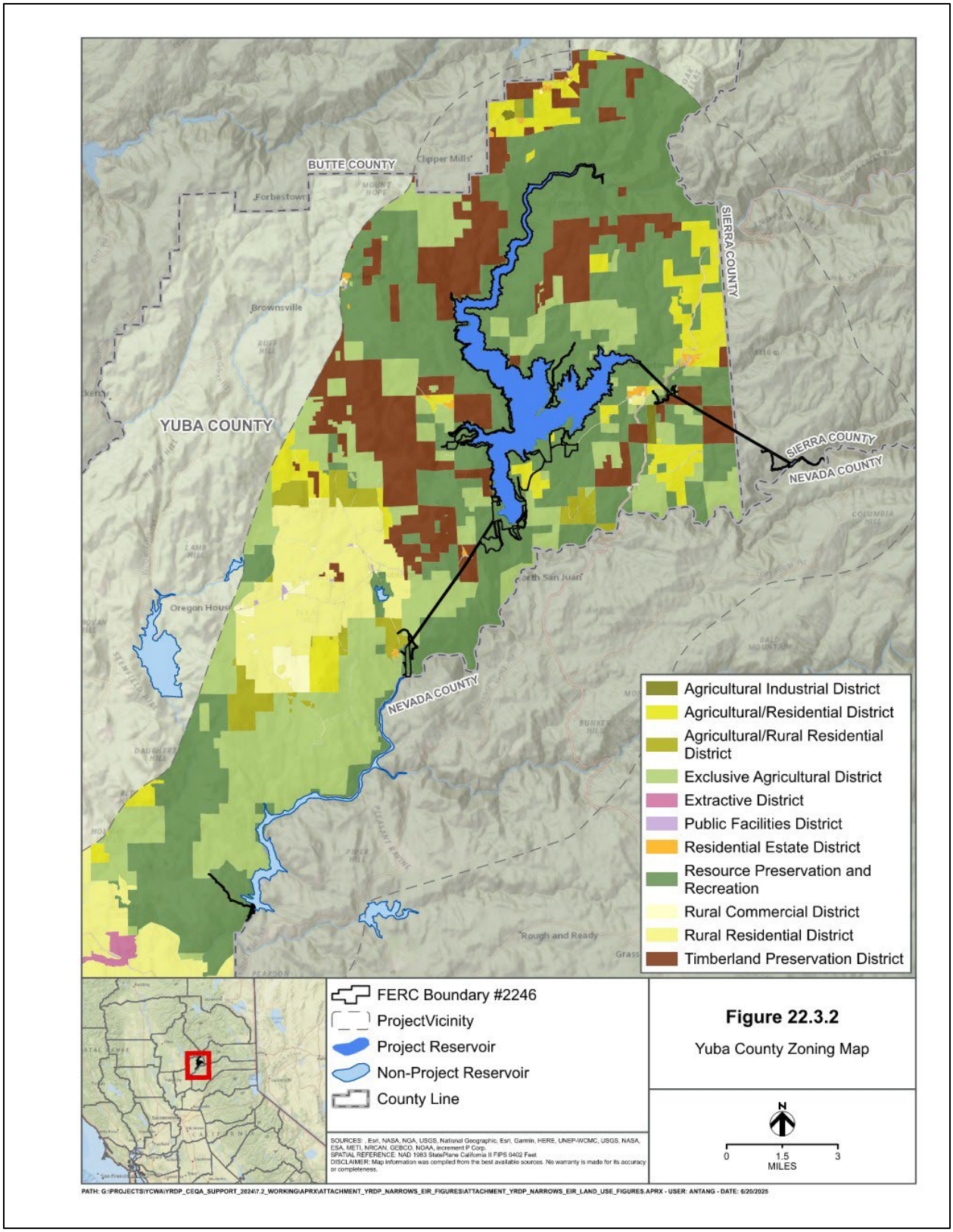

Figure 22.3-2. Yuba County Zoning Map

22.3.3.3 Nevada County General Plan

Like the Yuba County General Plan, the Nevada County General Plan, adopted in 1996 and last amended in 2014, guides the development of lands in unincorporated Nevada County. The General Plan Land Use Diagram indicates that the Nevada County land in the Project Area is designated Rural (Figure 22.3-3).

Several Nevada County General Plan policies have been adopted to avoid or mitigate environmental effects. Policies potentially applicable to the Proposed Projects include the following:

- **Policy 12.2.** Enforce Grading Ordinance requirements for grading or vegetation removal not associated with a development project. Exempted from this requirement are actions necessary for evaluation of soils and other environmental characteristics, and for control of fire fuels, and for agricultural and timber production.
- **Policy 12.4.** Require erosion control measures as an element of all County contracts, discretionary projects, and ministerial projects.
- **Policy 13.4A.** No net loss of habitat functions or values shall be caused by development where rare and endangered species and wetlands of over 1 acre, in aggregate, are identified during the review of proposed projects. No net loss shall be achieved through avoidance of the resource, or through creation or restoration of habitat of superior or comparable quality, in accordance with guidelines of the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

22.3.3.4 Nevada County Zoning Ordinance

The Nevada County Zoning Ordinance (Nevada County Code Title 3, Chapter II) is designed to serve as the primary tool to implement and ensure consistency with the goals, objectives, and policies of the Nevada County General Plan. Like the Yuba County Zoning ordinance, the Nevada County Zoning Ordinance establishes zoning districts and development regulations for each district.

As described in Chapter 21, Agriculture and Forestry Resources, County land in the vicinity of Englebright Lake is zoned AG-40 - General Agricultural, 40-ac minimum (Figure 22.3-4). Near the Our House Diversion Dam, County land is zoned FR-40 - Forest, 40-ac minimum.

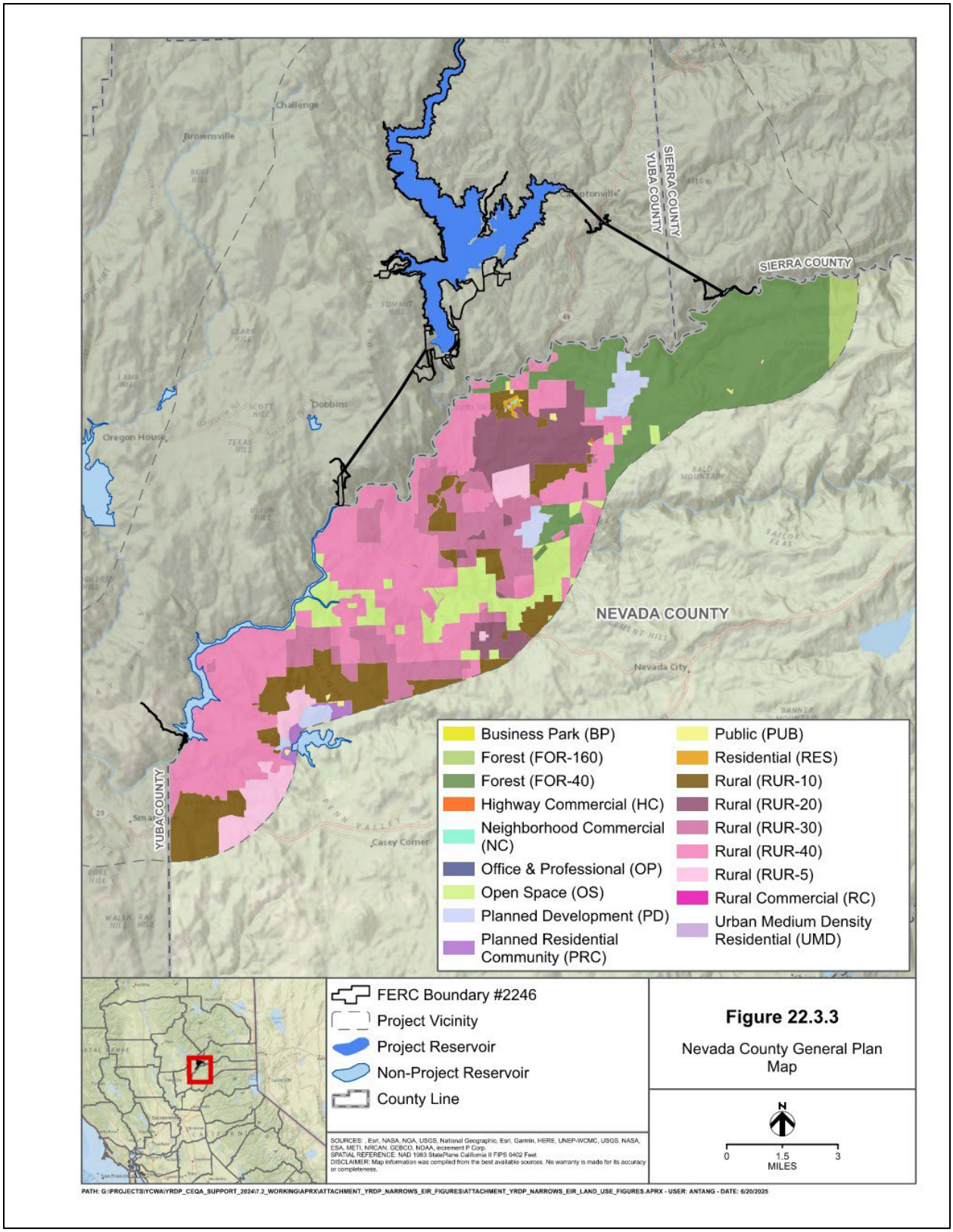

Figure 22.3-3. Nevada County General Plan Map

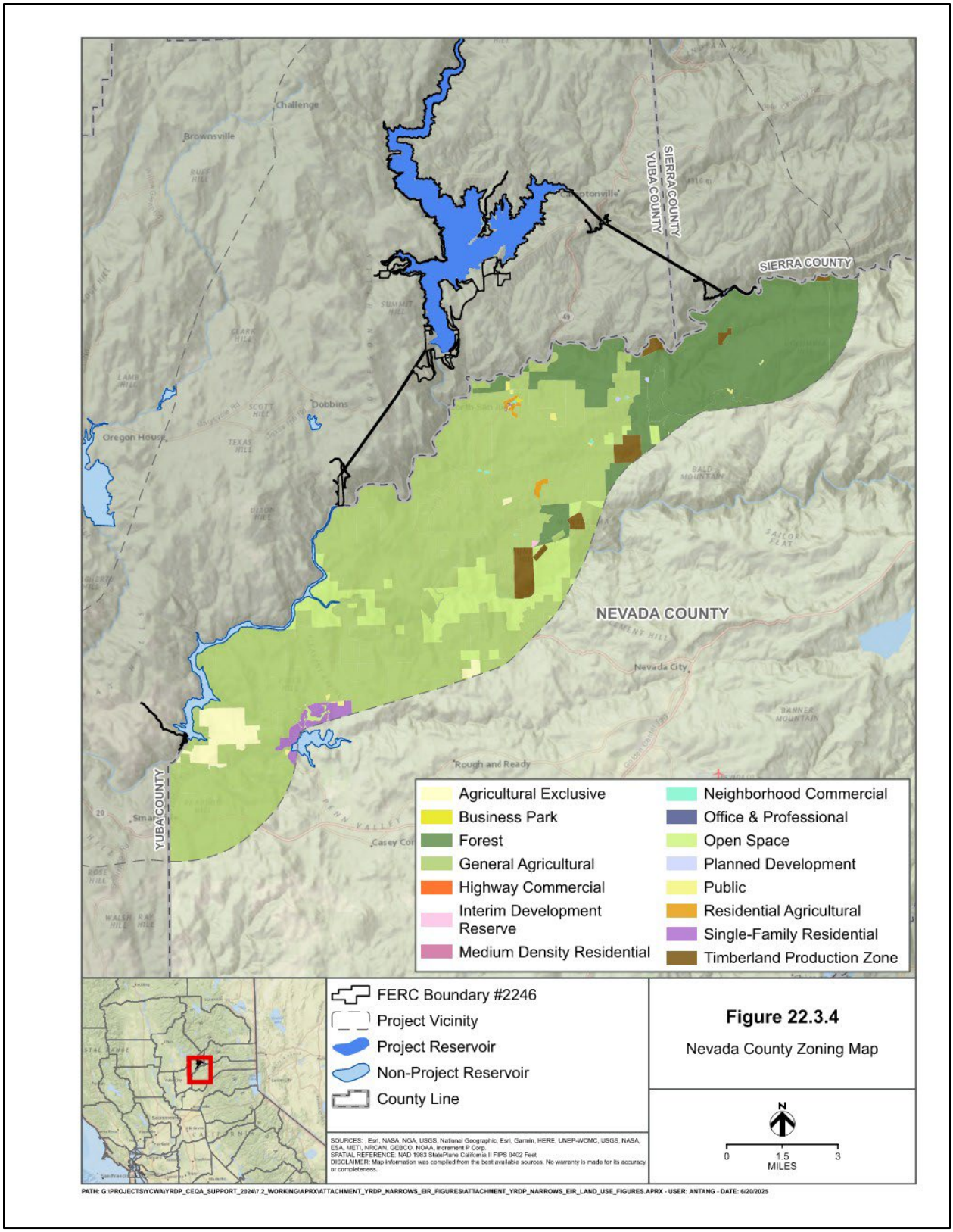

Figure 22.3-4. Nevada County Zoning Map

22.3.3.5 Sierra County General Plan

Like the other two general plans, the Sierra County General Plan, adopted in 1996 and last amended in 2012, guides the development of lands in unincorporated Sierra County. The General Plan Land Use Diagram indicates that the Sierra County land in the Project Area is designated Forest (Figure 22.3-5). Several Sierra County General Plan policies have been adopted to avoid or mitigate environmental effects. Policies potentially applicable to the Proposed Projects include the following:

- **Water Resources Policy 21 (Erosion and Sediment Control).** Coordinate with State and federal agencies in the requirement of reasonable Best Management Practices (BMPs).
- **Water Resources Policy 31 (Stream Setbacks).** Preserve the integrity of water courses throughout the County.
- **Plants and Wildlife Policy 2 (Allowable Uses in Stream Zones).** Within stream zones, control uses over which the County has jurisdiction to the extent necessary to prevent significant impacts to riparian and aquatic habitat.
- **Plants and Wildlife Policy 3 (Native Vegetation Retention in Stream Zones).** Prohibit removal of native vegetation in lake and stream zones except when done in conjunction with the permitted uses as described under #2, above.
- **Plants and Wildlife Policy 4 (Water Quality and Aquatic Habitat).** Protect bodies of water and their watersheds to prevent water degradation.
- **Plants and Wildlife Policy 5 (Impacts of Surface Water Diversions and Impoundments).** Discourage future surface water diversions and impoundments which could have a major adverse effect on fisheries and riparian areas. In general, this policy will apply when water is proposed to be diverted from or impounded upon natural water courses rather than existing diversion ditches. Where diversion is permitted, require at a minimum, releases higher than or at least as high as existing late summer minimum flows.

22.3.3.6 Sierra County Zoning Ordinance

As with the other zoning ordinances, the Sierra County Zoning Ordinance (Sierra County Code Title 15) is designed to enhance and implement the County General Plan, as well as provide a guide for the growth and development of Sierra County in accordance with the General Plan. The Zoning ordinance establishes zoning districts and development regulations for each district.

As noted in Chapter 21, Agriculture and Forestry Resources, most of the land in the vicinity of Proposed Projects facilities is zoned GF – General Forest. Some parcels in the vicinity are zoned TPZ – Timberland Production Zone, which is intended to maintain the availability of timberland in accordance with State legislation.

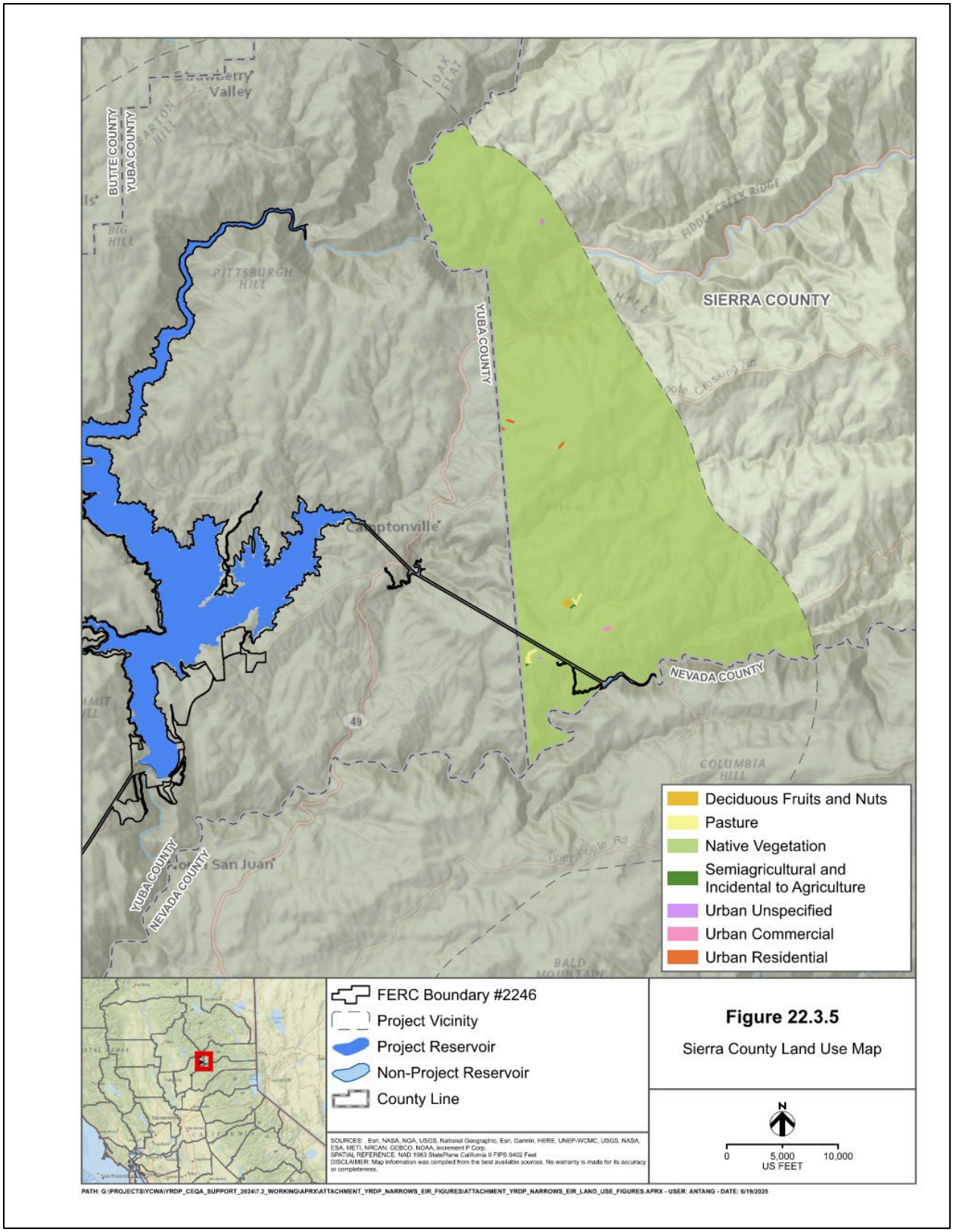

Figure 22.3-5. Sierra County General Plan Map

22.4 Impact Assessment Methodology

The impact analysis for land use and planning follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. The geographical scope of the impact analysis on land use is the area within and adjacent to the Project Area.

Impacts on land use and planning were assessed qualitatively based on the potential to interfere with existing land use plans. A desktop analysis was completed to collect and analyze data related to land use in the Project Area. For the purposes of this analysis, information related to land use was collected using the following sources:

- Yuba County General Plan (Yuba County 2011)
- Nevada County General Plan (Nevada County 2014)
- Sierra County General Plan (Sierra County 2012)
- Tahoe National Forest Land and Resource Management Plan (Tahoe National Forest 1990)
- Plumas National Forest Land and Resource Management Plan (Plumas National Forest 1988)

The websites of all three counties were consulted for additional information, including applicable zoning ordinances.

There are no construction activities associated with the Narrows Project. Because of this, Narrows construction impacts will not be analyzed in this chapter.

22.4.1 Impact Indicators and Significance Criteria

For land use and planning, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on land use and planning if it would:

- **Impact LUP-1:** Physically divide an established community.
- **Impact LUP-2**: Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

22.5 Environmental Impact Analysis

22.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact LUP-PP-1: Construction Impacts on Land Use and Planning

The Proposed YRDP Project includes improvements to existing water infrastructure and recreation facilities in a rural area. No YRDP improvements are proposed within an established community.

Construction work on YRDP facilities would occur on and near streams and New Bullards Bar Reservoir and in National Forest areas.

The YRDP is located mostly in Yuba County, with the Our House Diversion Dam located in Sierra County. An evaluation of the proposed YRDP's consistency with land use and zoning designations is presented below. It should be noted that any inconsistency of the project with land use and zoning code designations is an issue related to land use regulation, rather than a physical impact of the project on the environment. Where the project could conflict with a land use plan or policy that was adopted specifically for the purposes of preventing or reducing an adverse environmental effect, such potential conflicts are evaluated as stand-alone environmental impacts within each topic area of this DEIR.

As noted, within the Yuba County portion of the Project Area, the Yuba County General Plan designation is Natural Resources, and the predominant zone is RPR. The Natural Resources designation allows for public facilities and infrastructure, which would likely include the YRDP dams and powerhouses. Improvements to existing YRDP hydropower facilities would be consistent with the Natural Resources designation. Among its purposes, the RPR zone identifies lake recreation areas and provides for use of these areas for active public recreation purposes. The proposed construction of new YRDP recreation facilities, and improvements to existing recreation facilities, would be consistent with the recreation provisions of the RPR. In the Yuba County Development Code, it states that Major Utilities, such as the YRDP facilities, are allowable in areas zoned RPR with a conditional use permit. But, because it is a local government agency, YCWA is not required to obtain a conditional use permit for the proposed YRDP hydropower facility improvements, per California Government Code § 53091(e).

As noted, the Our House Diversion is located in the portion of Sierra County designated by the Sierra County General Plan as Forest and is zoned as GF. Public utility distribution facilities are a permitted use in the GF zone. Construction would be limited to the diversion dam site and would not encroach on land designated Forest.

Construction of YRDP recreation facilities would mainly occur on Tahoe National Forest land, with limited construction occurring on Plumas National Forest land. As explained in Chapter 2, Project Description, when constructing new YRDP recreation facilities, Yuba Water would obtain all necessary permits and approvals, including USFS permits for work on NFS land.
In summary, YRDP construction under the Proposed Projects scenario would not divide an established community, and construction activities would not conflict with applicable land use plans, policies, or regulations designed to avoid or minimize environmental effects. YRDP construction impacts on land use and planning would be **less than significant**. No CEQA mitigation is required.

YRDP Impact LUP-PP-2: Operational Impacts on Land Use and Planning

As noted under YRDP Impact LUP-PP-1, the proposed YRDP does not include improvements within an established community. YRDP facilities would be consistent with the existing land use designations of the applicable General Plans and with the existing zoning in both Yuba and Sierra Counties. As noted, the YRDP is primarily located in an RPR zone, which allows for recreational uses, including campgrounds. With respect to recreational facilities on NFS lands, the *Recreation*

Facilities Plan describes the routine operations and maintenance activities for existing, expanded, and new recreational facilities. The *Recreation Facilities Plan* was developed in consultation with USFS. The National Forest LRMPs described above allow for recreational uses. Operations of YRDP facilities would be consistent with the allowed uses under the two General Plans and the respective zoning designations of the counties. Because of this, YRDP operations would not divide an established community or conflict with applicable land use plans, policies, or regulations, and this impact would be **less than significant**. No CEQA mitigation is required.

Narrows Impact LUP-PP-1: Operational Impacts on Land Use and Planning

The Narrows Project facilities are within a rural area and are not located within any established community. Furthermore, the Proposed Narrows Project does not include any changes to existing Narrows Project works or facilities that could create a physical division that could separate surrounding land uses. Therefore, the Proposed Narrows Project would not divide any established communities.

The operations of Narrows Project facilities under the Proposed Projects scenario would not change existing land uses and therefore would not create any conflicts with applicable land use plans, policies, or regulations. Potential conflicts with a land use plan or policy that was adopted specifically for the purposes of preventing or reducing an adverse environmental effect are evaluated as stand-alone environmental impacts within each topic area of this DEIR. Therefore, land use and planning impacts of Proposed Narrows Project operations would be **less than significant**, and no CEQA mitigation would be required.

22.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact LUP-Alt1-1: Construction Impacts on Land Use and Planning

YRDP construction impacts under Alternative 1 would be the same as those under the Proposed Projects, because the construction activities under Alternative 1 would be the same as those under the Proposed Projects. For the same reasons explained in YRDP Impact LUP-PP-1, YRDP construction under Alternative 1 would have impacts on land use and planning that are **less than significant**.

YRDP Impact LUP-Alt1-2: Operational Impacts on Land Use and Planning

Non-flow-based Alternative 1 YRDP operations would be the same as those under the Proposed Projects scenario; flow-based operations would not have land use and planning impacts. For the same reasons explained in YRDP Impact LUP-PP-2, YRDP operations under Alternative 1 would have impacts on land use and planning that are **less than significant**.

Narrows Impact LUP-Alt1-1: Operational Impacts on Land Use and Planning

Alternative 1 non-flow Narrows Operations would be the same as those under the Proposed Projects. Differences in flows would not affect land use impacts. For the same reasons discussed under Narrows Impact LUP-PP-1, Alternative 1 Narrows Project operations would have impacts on land use and planning that are **less than significant**.

22.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact LUP-Alt2-1: Construction Impacts on Land Use and Planning

YRDP construction impacts under Alternative 2 would be the same as those under the Proposed Projects, because the construction activities under Alternative 2 would be the same as those under the Proposed Projects. For the same reasons explained in YRDP Impact LUP-PP-1, Alternative 2 YRDP construction would have impacts on land use and planning that are **less than significant**.

YRDP Impact LUP-Alt2-2: Operational Impacts on Land Use and Planning

Non-flow-based Alternative 2 YRDP operations would be the same as those under the Proposed Projects scenario; flow-based operations would not have land use and planning impacts. For the same reasons explained in YRDP Impact LUP-PP-2, YRDP operations under Alternative 2 would have impacts on land use and planning that are l**ess than significant**.

Narrows Impact LUP-Alt2-1: Operational Impacts on Land Use and Planning

Alternative 2 non-flow Narrows Project operations would be the same as those under the Proposed Projects. Differences in flows would not affect land use impacts. For the same reasons discussed under Narrows Impact LUP-PP-1, Alternative 2 Narrows Project operations would have impacts on land use and planning that are **less than significant**.

22.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact LUP-NP-1: Construction Impacts on Land Use and Planning

The No Project Alternative would not have land use or planning impacts from construction because no construction would occur. Therefore, there would be **no impact** on land use and planning.

YRDP Impact LUP-NP-2: Operational Impacts on Land Use and Planning

Under the No Project Alternative, Yuba Water would continue existing YRDP operations, excluding hydropower generation, outside of FERC jurisdiction for water supply and flood management purposes. As a result, land use and planning conditions would be generally unchanged relative to the Existing Condition. As noted, flow-based operations would have no impact on land use and planning. The No Project Alternative would have **no impact** on land use and planning.

Narrows Impact LUP-NP-1: Operational Impacts on Land Use and Planning

Under the No Project Alternative, Yuba Water would continue existing Narrows Project operations, excluding hydropower generation, outside of FERC jurisdiction for water supply and flood management purposes. As a result, land use and planning conditions would be generally unchanged relative to the Existing Condition. As noted, flow-based operations would have no impact on land use and planning. The No Project Alternative would have **no impact** on land use and planning.

22.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects' and alternatives' cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

22.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

The geographic scope of cumulative impact analysis for land use planning is typically limited to the extent of the overlapping jurisdictions. Only those projects that could affect land use planning described in this chapter are included in the qualitative evaluation that is presented in subsequent sections of this chapter. Therefore, the geographical scope would be Yuba, Nevada, and Sierra Counties.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in conflicts with existing land use planning policies. Impacts involving adopted land use plans or policies and zoning are project-specific and generally would not combine to result in significant cumulative impacts related to land use. Any inconsistency with land use and zoning code designations is an issue related to land use regulation rather than a physical impact of the project on the environment.

Only those projects that could affect land use and planning are included in the qualitative evaluation that is presented in subsequent sections of this chapter. These include the following:

- FERC Hydropower Projects in the Yuba River Watershed
    - *Yuba-Bear, Upper Drum-Spaulding, and the Lower Drum Hydroelectric Projects (Yuba-Bear/Drum-Spaulding Relicensings)*
- Ecosystem Restoration and Fisheries Improvement Projects
    - *North Yuba Forest Partnership*
    - *Yuba Foothills Healthy Forest Project*
    - *Upper Yuba Headwaters Forest Restoration Project*
    - *'Inimim Forest Restoration Project*
    - *Yuba Roadside Fuel Treatment Project*
    - *Lower Yuba River Accord Water Transfer Program Extension*

- Other Local Projects in the Yuba Region
    - *Yuba River Resilience Initiative*

These projects are described in Chapter 4, and their impacts are addressed below.

Any inconsistency of a project with land use and zoning code designations is an issue related to land use regulation rather than a physical impact of the project on the environment. All of the forest restoration projects listed above are in the area upstream of Englebright Dam. The purpose of these projects is to reduce fire risk by removing vegetation through prescribed burning, mechanical/manual treatment, and creation of firebreak, among other methods. These projects would support the fire risk reduction goals outlined in the General Plans for Yuba, Nevada, and Sierra Counties. Additionally, each project would be required to demonstrate compliance with other applicable land use plans, policies, or regulations of agencies with jurisdiction.

The FERC hydropower projects listed above are also in the area upstream of Englebright Dam. Like the Proposed Projects, these projects would involve relicensing of hydropower facilities. NID is applying for relicensing of the Yuba-Bear Project, while PG&E is applying for relicensing of the Drum-Spaulding projects. The Yuba-Bear relicensing would involve some changes in operations that would affect minimum stream flows, spills from project canals and conduits, and the rate of flow fluctuations following spill events. It would also involve the construction of new facilities such as a new powerhouse and new or rehabilitated recreation facilities. The Drum-Spaulding relicensing would involve the same changes in operations as the Yuba-Bear relicensing, with additional changes specific to Spaulding Dam, Lake Valley Dam, and Drum Canal. This relicensing would also involve new or rehabilitated recreation facilities, as well as retirement of one powerhouse and the removal of a diversion and associated conveyance system.

The Lower Yuba River Water Accord Transfer Program Extension, as described in Chapter 4, would not result in any changes to reservoir storage levels or flow releases to the lower Yuba River. The flood control projects would provide long-term benefits to valuable natural resources, including forestland, by providing increased protection from future flood damages and would not have a long-term detrimental effect on the management or use of surrounding natural resources or recreation. Additionally, the projects listed above would not change zoning designations, general plan designations, or the overall rural character of lands in the vicinity of the project site, or result in land use inconsistencies with local and regional plans.

As explained above, the Proposed Projects would not result in any significant land use and planning impacts. None of the cumulative projects would combine with the less than significant impacts of the Proposed Projects to create a significant cumulative impact. Therefore, the Cumulative Condition, including the Proposed Projects, would not result in a significant land use and planning impact relative to the Existing Condition.

YRDP Cumulative Impact LUP-PP-1: Potential for significant cumulative land use and planning impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative land use and planning impact would be less than significant. Accordingly, the Proposed YRDP would result in a **less than significant cumulative impact** to land use and planning.

Narrows Cumulative Impact LUP-PP-1: Potential for significant cumulative land use and planning impacts resulting from the Narrows Project. As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative land use and planning impact would be less than significant. Accordingly, the Proposed Narrows Project would result in a **less than significant cumulative impact** to land use and planning.

22.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on land use and planning are listed in the preceding Section 22.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 22.6.2 above. Alternative 1 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include differences in flow-based operations, those differences do not affect land use and planning considerations in the analysis and conclusions in Section 22.6.2. For the same reasons explained in Section 22.6.2 above, the Cumulative Condition, including Alternative 1, would not result in a significant land use and planning impact relative to the Existing Condition.

YRDP Cumulative Impact LUP-Alt1-1: Potential for significant cumulative land use planning impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative land use and planning impact would be less than significant. Accordingly, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** to land use and planning.

Narrows Cumulative Impact LUP-Alt1-1: Potential for significant cumulative land use planning impacts resulting from the Narrows Project.

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative land use and planning impact would be less than significant. Accordingly, Narrows Project operations under Alternative 1 would result in a **less than significant cumulative impact** to land use and planning.

22.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on land use and planning are listed in the preceding Section 22.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 22.6.2 above. Alternative 2 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include differences in flow-based operations, those differences do not affect land use and planning considerations in the analysis and conclusions in Section 22.6.2. For the same reasons explained in Section 22.6.2 above, the Cumulative Condition, including Alternative 2, would not result in a significant land use and planning impact relative to the Existing Condition.

YRDP Cumulative Impact LUP-Alt2-1: YRDP Cumulative Impacts on Land Use and Planning

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative land use and planning impact would be less than significant. Accordingly, YRDP construction and operations under Alternative 2 would result in a **less than significant cumulative impact** to land use and planning.

Narrows Cumulative Impact LUP-Alt2-1: Narrows Project Cumulative Impacts on Land Use and Planning

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative land use and planning impact would be less than significant. Accordingly, Narrows Project operations under Alternative 2 would result in a **less than significant cumulative impact** to land use and planning.

22.7 Literature Cited

Federal Energy Regulatory Commission (FERC). 2019. Final Environmental Impact Statement (FEIS) for Hydropower License for the Yuba River Development Project (P-2246-065). Prepared by FERC and the U.S. Army Corps of Engineers (USACE). FERC/EIS-0281F. January 2019.

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CHAPTER 23

PUBLIC SERVICES

23.1 Introduction

This chapter describes the environmental setting and regulatory framework for public services. Public services, as indicated in the Environmental Checklist in CEQA Guidelines Appendix G, typically include fire protection, police protection, schools, parks, and other public services. The focus of this analysis is on the fire protection and police protection impacts of the Proposed Projects and Alternatives. As discussed in Chapter 25, Other CEQA Considerations, the Proposed Projects would not induce substantial unplanned population growth in an area, either directly or indirectly. Because of this, it would not lead to an increased demand for governmental facilities that occur with population growth, mainly schools, urban parks, libraries, and other such public facilities. Therefore, potential impacts on these public services are not discussed further in this chapter. However, Proposed Projects construction and operations could involve circumstances that require the use of fire protection and police protection services; therefore, impacts on these two public services are further analyzed. Chapter 11, Recreation, discusses impacts on recreational facilities.

23.2 Environmental Setting

23.2.1 Fire Protection

Fire protection services in unincorporated Yuba County are provided by various agencies. Much of the rural unincorporated County receives fire protection from the California Department of Forestry and Fire Protection (CalFire). CalFire provides service to State Responsibility Areas – areas that are not otherwise served by a fire department or district. CalFire maintains a station in the community of Loma Rica.

The USFS provides fire protection service for National Forest lands in the Project Area. As of July 2024, the Forest Service employs 11,393 firefighters for its lands across the United States. Of that total, 3,549 have been deployed in the Pacific Southwest Region, which includes California. The Tahoe National Forest has fire stations and resources throughout its region, including in Nevada City, Grass Valley, Downieville, and Camptonville.

There are several local fire protection agencies in the Project Vicinity. Within Yuba County, these include the Camptonville Community Services District, the Dobbins-Oregon House Fire Protection District, the Foothill Fire Protection District, and the Smartsville Fire Protection District. All four of these districts are staffed by volunteers. The Nevada County portion of the Project Vicinity is served by the Penn Valley Fire Protection District and the North San Juan Fire Protection District. The North San Juan District is staffed by volunteers, but the Penn Valley Fire District has a paid staff. Fire protection service in the Sierra County portion of the Project Vicinity is provided by the Pliocene Ridge Community Services District. The fire protection staff of this district is volunteer. Although generally limited to their service areas, CalFire and the Forest

Service will provide assistance to local agencies during major incidents, particularly wildfires (Yuba County 2011).

Yuba Water notifies appropriate response agencies in the event of an emergency. Fire suppression systems and equipment are included in each Project powerhouse and building. As noted in Chapter 18, Wildfire, the fire suppression equipment owned by Yuba Water primarily includes fire extinguishers, permanently installed CO_2 systems within powerhouses, a water trailer, back-pack water tanks, shovels, picks, and axes. In addition, Yuba Water maintains a vegetation-free defense zone of about 40 feet around each aboveground project facility, excluding recreation facilities (FERC 2019).

23.2.2 Police Protection

The Yuba County Sheriff's Department is the main provider of law enforcement services in the unincorporated portion of Yuba County. The Sheriff's Department maintains its main station and jail in the City of Marysville along with several substations, including one in Brownsville that is nearest the Project Area. Resident deputies serve the foothills.

In unincorporated Nevada County, the Nevada County Sheriff's Department provides law enforcement services. The Sheriff's Department has its main office in Nevada City and an office in Truckee in eastern Nevada County. In Sierra County, including the incorporated City of Loyalton, law enforcement services are provided by the Sierra County Sheriff's Department. The main station is in Downieville, and a substation is in Loyalton in eastern Sierra County.

The California Highway Patrol (CHP) provides traffic control, investigation, and law enforcement services related to vehicles on State Highways, freeways, and roads in the unincorporated County. In addition, the CHP has primary jurisdiction over roads used for major hazardous materials transport. The CHP operates out of an office in Yuba City, which serves both Yuba and Sutter Counties. It also has an office in Grass Valley in Nevada County.

Law enforcement is a specific responsibility identified in the 2009 Annual Operating Agreement for the New Bullards Bar Recreation Area, for which Yuba Water annually reimburses the Forest Service through the Collection Agreement (YCWA 2023). In addition, Yuba Water funds local law enforcement for patrolling New Bullards Bar Reservoir during the recreation season.

23.3 Regulatory Setting

Chapter 18, Wildfire, describes various plans and regulations applicable to the control of wildfires. These are also pertinent to fire protection issues. Other standards and guidelines related to fire protection are presented below.

23.3.1 U.S. Forest Service Standards

The USFS has established standards for recreation sites on its lands that are relevant to fire protection. It is expected that all Yuba Water recreation facilities on USFS lands will observe these standards. These include the following:

National Quality Standards for Recreation Sites (2002)

Fireplaces, Pedestal Grills, Fire Rings, And Stoves

- Maintain 5 feet of defensible space around all fireplaces and grills at all times (no needles, leaves, or organic material that can carry a flame)
- No more than half-full of ashes
- All ashes and partially burned wood confined to fireplace or grill
- Grill surface free of grease and food particles at time of ash removal
- Pedestals and bases straight and secure, and components functional
- Leftover firewood stacked beside unit

Forest Service Manual 2300 – Cleaning Recreation Sites (1995)

Fire Rings

- Make sure ashes are cool; shovel excess ashes from the ring into a plastic-lined metal container that does not contain burnable garbage. Pouring water into the plastic liner is recommended. Make sure all charred logs are inside the fire ring or stacked neatly beside it for use.
- Rake the area, if necessary, to camouflage any ashes that may have blown from the ring and to leave the site neat and ready for use.
- Remove any makeshift fire rings. Scatter the stones from the site. Remove the ashes and rake the area to remove all signs of the fire ring.

Forest Service Handbook 2309.13 – Recreation Site Handbook, Chapter 10: Planning and Design of Developed Recreation Sites and Facilities (2018)

12.14 - Fire Protection

1. Where fires for cooking or warming purposes will be allowed at developed recreation sites, install fire-containing devices for proper fire control.
2. Locate fire-containing devices at developed recreation sites away from trees, shrubs, and other flammable features.
3. Construct and maintain a firebreak around facilities to reduce potential wildfire impacts.
4. Use fire-resistant materials that are historically and architecturally consistent with the setting, as well as construction techniques, such as enclosing overhangs and eves, to minimize the risk of fire damage.

23.3.2 California Fire Code

The California Fire Code includes specialized regulations related to construction, maintenance, and the use of buildings in relation to fire and safety. The extent of the code coverage pertains to fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosions hazard safety, hazardous materials storage and use, provisions to aid fire responders, industrial processes, and other fire safety requirements for new and existing buildings.

23.3.3 California Health and Safety Code

California Health and Safety Code §13000 *et seq.* sets forth regulations that address fire protection. Among other subjects, these regulations cover building standards, fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, and fire suppression training.

23.3.4 County General Plans

Yuba County General Plan

The Yuba County 2030 General Plan has as an overall goal the improvement of the quality of life. As part of achieving this goal, the County pledges to provide public services such as law enforcement, fire protection, and civic facilities at appropriate levels for urban and rural communities. The Community Development Element and the Public Health and Safety Element of the Yuba County 2030 General Plan contains goals and policies relevant to public services. The following goals and policies of these elements are applicable to the services analyzed in this chapter (Yuba County 2011):

Community Development Element

GOAL CD12. Ensure high-quality public services, infrastructure, and facilities with adequate capacity to meet the needs of Yuba County's existing and future residents, businesses, industries, and employers.

- Policy CD 12.7: The County's target for fire protection is an ISO (Insurance Service Organization) rating of no greater than 5 within the Valley Growth Boundary and no greater than 8 for Rural Communities.
- Policy CD12.9: The County's target for law enforcement is to provide one officer per 1,000 persons within the unincorporated area and to provide an average response time of 5 minutes or less for Priority 1 emergency calls within the Valley Growth Boundary.

Public Health and Safety Element

GOAL HS2: Protect people and property from wildland and urban fire risk and create more fire-resilient communities.

Policy HS2.1: Prior to approval, new developments proposed in areas of very high, high, or moderate fire hazard, as designated on maps maintained by Cal Fire, shall demonstrate compliance with Fire Safety Regulations and local regulations for defensible space, ignition-resistant construction materials, property maintenance to reduce fuels, natural hazards disclosure requirements, emergency access and multiple access points, availability of water for fire suppression, and other relevant building and development standards.

Nevada County General Plan

Like the Yuba County General Plan, the Nevada County General Plan also addresses public services. The General Plan has four central themes that articulate the vision for County

development. Themes pertinent to public services include 1) sustaining a quality environment, and 2) "Planned land use patterns will determine the level of public services appropriate to the character, economy and environment of each region (Nevada County 2014).

The Public Facilities and Services Element and the Safety Element of the Nevada County General Plan contains goals, objectives, and policies relevant to the public services analyzed in this chapter. These include the following (Nevada County 2014):

Public Facilities and Services Element

GOAL 3.1: Provide for public facilities and services commensurate with development type and intensity.

> *Objective 3.1: Public facilities and services shall be directed as follows: a higher level to Community Regions and a lower level to Rural Regions.*
>
> Policy 3.1: The levels of service and provision of public facilities in Community Regions shall be based upon improving the capacity of public facilities to serve higher levels of development directed to Community Regions. The levels of service and provision of public facilities in Rural Regions shall be based upon limiting the amount of development to ensure that adequate facilities are available. Planning for future public facilities and services in Community and Rural Regions shall be based upon the following criteria:
>
> ***COMMUNITY REGIONS***
>
> a. public water and sewer
> b. retention of existing emergency response time
> c. intercommunity-transit
>
> ***RURAL REGIONS***
>
> ***Rural Centers***
>
> a. public or on-site community water and sewer systems
> b. decreased emergency response times
>
> ***Rural Areas***
>
> a. individual septic and wells or on-site community water and sewer systems
> b. decreased emergency response time
> c. limited transit

Safety Element

GOAL FP-10.7: Enhance fire safety and improve fire protection effectiveness through infrastructure and service improvements.

Policy FP-10.7.4: Encourage fire protection agencies to determine appropriate levels of fire protection facilities and services for both *Community* and *Rural Regions*.

Policy FP-10.7.5: Encourage the upgrading of facilities within existing fire protection districts, and encourage the expansion of existing districts where warranted by the population density allowed in the General Plan.

GOAL FP-10.8: Reduce fire risk to life and property through land use planning, ordinances, and compliance programs.

Policy FP-10.8.1: Nevada County shall apply and enforce State of California Public Resource Code 4290 and 4291 through County-adopted ordinances, which includes minimum fire safety standards related to defensible space that are applicable to State responsibility area lands and lands classified and designated as very high fire hazard severity zones as reflected on current and future maps defined in subdivision (i) of Section 51177 of the California State Government Code. Nevada County shall continue to adopt revisions to the California Fire and Building Codes and other standards, which address fire safety, as they are approved by inspection organizations and the State of California. Review, revise, and/or adopt existing or new local codes, ordinances, and Fire Safe Standards to reflect contemporary fire safe practices.

Sierra County General Plan

Like the two other General Plans, the Sierra County General Plan addresses public services. One of the goals of the General Plan is to provide for essential public facilities and services and allow for the provision of quasi-public facilities and services which are in keeping with the customs, culture, and heritage of Sierra County (Sierra County 2012).

The Public Facilities Element of the Sierra County General Plan contains policies relevant to the public services analyzed in this chapter. These include the following (Sierra County 2012):

Policy 6: Adequately finance Sheriff's Department needs for facilities expansion, staffing, and equipment to correspond to Plan area growth and development.

Policy 7: Encourage and assist Fire Districts to meet the fire protection needs of the County at existing levels of service.

23.4 Impact Assessment Methodology

This chapter evaluates the potential impacts to the physical environment resulting from a potential need for new or altered public service facilities. Therefore, this chapter identifies impacts of the Proposed Projects related to public service facilities during construction and O&M. The study area for public services refers to the service areas of the relevant fire and police protection agencies that serve the Project Area.

The impact analysis for public services follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis.

A desktop analysis was completed to collect and analyze information related to public services in the Project Area. Information was provided by the Yuba County General Plan EIR and the websites of fire protection and police protection agencies. Appropriate information from the 2019 FEIS was also included, although it did not explicitly analyze impacts on public services. Information from

these materials was used to determine if the Proposed Projects and the alternatives would require facilities beyond those that currently exist that could cause significant environmental impacts if constructed, which is one of the significance criteria described below.

YRDP construction-related activities for Alternatives 1 and 2 are the same as those described for the Proposed Projects. The Narrows Project would not involve any construction activities. Therefore, construction impacts related to the Narrows Project are not analyzed in this chapter. Likewise, as there is no YRDP construction proposed below Englebright Dam, no YRDP construction impacts are analyzed in the Lower Yuba River sections.

23.4.1 Impact Indicators and Significance Criteria

For public services, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on public services if it would:

Impact PS-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

As noted in the Introduction to this chapter, the analysis is limited to fire protection and police protection, as the Proposed Projects would have no potentially significant impact on other public services.

23.5 Environmental Impact Analysis

23.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact PS-PP-1: Construction Impacts on Fire Protection Services

YRDP construction would involve the use of construction equipment and vehicles, the improper use or placement of which could ignite a fire. Yuba Water would require all work involving construction vehicles and equipment to comply with equipment specifications and applicable regulations regarding fire safety, which would minimize the risk of an accidental fire ignition. As such, YRDP construction would not result in any significant additional demands for fire protection services on local fire agencies. As YRDP construction would not generate significant additional demand for fire protection, no new or expanded facilities would be required. Therefore, YRDP construction would have **no impact** associated with the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts. No CEQA mitigation would be required.

YRDP Impact PS-PP-2: Operational Impacts on Fire Protection Services

YRDP O&M has the potential to contribute to wildfire risk though, no wildfires have resulted from project-related O&M activities to date (FERC 2019). However, as with construction, improper use or placement of equipment and vehicles could ignite a fire.

The YRDP would implement a *Fire Prevention and Response Plan*, prepared in accordance with FPA Section 4(e) Condition 52, which would improve public safety by ensuring that YRDP O&M are conducted in a manner that would help to prevent the ignition and spread of wildfires and guiding response should wildfires occur (see also Chapter 18, Wildfire). The plan would provide Yuba Water personnel with more formal guidance on fire protection and prevention that currently exists.

Measures within the *Fire Prevention and Response Plan* include the management of defensible space, vegetation clearing, evacuation planning, and post-fire condition management. Also, the plan sets forth procedures on how Yuba Water personnel are to report fires, and it would require users of equipment/tools to take specific fire protection actions and measures during the fire precautionary area, as identified in Attachment A of the plan. Implementation of the *Fire Prevention and Response Plan* is expected to reduce the likelihood of fire from YRDP O&M, thereby reducing the need for additional fire protection services.

New recreation facilities such as campground sites are proposed (see Chapter 11, Recreation). These new facilities would accommodate an increased number of visitors, which could increase the potential risk of fire started by these visitors, either through accident, negligence, or intent. Fires deliberately set by visitors at recreation facilities are rare, since perpetrators are subject to criminal and civil penalties, which act as a deterrent. Therefore, the main concern is for fires that are set by accident or by negligence.

While fires caused by accident or by negligence cannot be completely avoided, recreation facilities can be designed to minimize the fire risk. Recreation facilities on USFS lands, which includes all YRDP recreation facilities, will observe the USFS standards for recreation sites described above. Of particular note are the provisions of Forest Service Manual 2309.13 regarding the planning and design of developed recreation sites. Among these provisions are the installation of fire-containing devices where fires are allowed, the location of fire-containing devices away from vegetation and other flammable features, the construction and maintenance of firebreaks, and the use of fire-resistant materials.

Yuba Water would continue to rely on existing fire protection agencies for firefighting services. Implementation of the *Fire Prevention and Response Plan,* along with observance of USFS standards, would minimize the likelihood of fires occurring as a result of YRDP operations that would require a response from fire protection agencies. YRDP operations are not expected to generate additional demand for fire protection such that new or expanded fire protection facilities would be required. YRDP operations would have impacts related to fire protection facilities that are **less than significant**, and no CEQA mitigation would be required.

YRDP Impact PS-PP-3: Construction Impacts on Police Protection Services

YRDP construction would involve equipment and materials that may be targets of theft if not properly secured. This may require a temporary increase in patrols; however, no new or physically

altered facilities of the Yuba County Sheriff's Department would be necessary to accommodate increased patrols. Such construction impacts would cease with the completion of work, and any equipment and materials remaining would be removed. As YRDP construction would not generate additional permanent demand for police protection, no new or expanded facilities would be required. Therefore, YRDP construction would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts. No CEQA mitigation would be required.

YRDP Impact PS-PP-4: Operational Impacts on Police Protection Services

YRDP facilities are currently served by the Yuba County Sheriff's Department. The only facilities that may experience an increase in need for law enforcement services are the recreational facilities. As noted, Yuba Water relies on local law enforcement for patrolling New Bullards Bar Reservoir during the recreation season. It is expected that this arrangement would continue.

O&M activities would change little from the Existing Condition. While dam/hydroelectric operations would change, such changes would not be substantial, and none of these operations would require additional police protection services.

As noted, new recreation facilities such as campground sites are proposed. These new facilities would accommodate an increased number of visitors, which could potentially increase the number of incidents requiring law enforcement services. By itself, the increased need for law enforcement services is not a CEQA impact, as this is not an impact on the physical environment. Therefore, the issue to be analyzed is if the potential increase in law enforcement services would require new or expanded police protection facilities in addressing this demand. The anticipated use of the recreational facilities is not expected to require additional law enforcement personnel or facilities to accommodate personnel and vehicles. In a comment letter on the FEIS, the Yuba County Sheriff's Department did not raise concerns about the need for increased personnel or facilities, except that a previous proposal to increase public access below New Bullards Bar Dam for recreational whitewater activities would increase costs related to search and rescue efforts (FERC 2019). This earlier proposal is not part of the Proposed Projects.

For the foregoing reasons, it is expected that YRDP operations would not generate significant additional demand for police protection such that new or expanded facilities would be required. Therefore, YRDP operations would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts. No CEQA mitigation would be required.

Narrows Impact PS-PP-1: Operational Impacts on Fire Protection Services

As with YRDP O&M, Narrows Project O&M has low potential for starting fires; however, improper use or placement of equipment or vehicles could ignite a fire. It is expected that Yuba Water, as the operator of this project, would apply the same fire protection and prevention procedures that are specified in the *Fire Prevention and Response Plan.* This would improve public safety by ensuring that Narrows Project O&M is conducted in a manner that would prevent the ignition and spread of wildfires and guiding response should wildfires occur. Implementation of the *Fire Prevention and Response Plan* would reduce the likelihood of fire from Narrows Project operations, thereby reducing the need for additional fire protection service.

There are no recreational facilities managed by Yuba Water in the lower Yuba River, including the Narrows Project Area. Therefore, Narrows Project operations would not generate additional demand for fire protection such that new or expanded facilities would be required. Narrows Project operations would have **no impact**, and no CEQA mitigation would be required.

Narrows Impact PS-PP-2: Operational Impacts on Police Protection Services

O&M activities would change little from the Existing Condition. While dam/hydroelectric operations would change, such changes would not be substantial, and none of these operations would require additional police protection services. There are no recreational facilities managed by Yuba Water in the lower Yuba River, including the Narrows Project Area, and none are proposed. Therefore, Narrows Project operations would not generate additional demand for police protection such that new or expanded facilities would be required. Narrows Project operations would have **no impact**, and no CEQA mitigation would be required.

23.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact PS-Alt1-1: Construction Impacts on Fire Protection Services

Alternative 1 YRDP construction activities would be the same as under the Proposed Projects. Therefore, construction impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-1). Yuba Water would require all work involving construction vehicles and equipment to comply with equipment specifications and applicable regulations regarding fire safety. As such, YRDP construction would not place additional permanent demands for fire protection services on local fire agencies. Therefore, Alternative 1 YRDP construction would have **no impact** associated with the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts.

YRDP Impact PS-Alt1-2: Operational Impacts on Fire Protection Services

Alternative 1 YRDP non-flow operations and maintenance activities would be the same as under the Proposed Projects. Compared to the Proposed Projects, Alternative 1 includes changes in flows, but these changes would not lead to additional demand for fire protection services nor increase the likelihood of causing fires that would require such services. Therefore, YRDP Alternative 1 operational impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-2).

The YRDP would implement a *Fire Prevention and Response Plan*, which would reduce the likelihood of fire from YRDP O&M. Recreation facilities on USFS lands, which includes all YRDP recreation facilities, would observe the USFS standards for recreation sites. Therefore, Alternative 1 YRDP operations would not require the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts. Impacts would be **less than significant**.

YRDP Impact PS-Alt1-3: Construction Impacts on Police Protection Services

Alternative 1 YRDP construction activities would be the same as under the Proposed Projects. While construction would involve equipment and materials that may be targets of theft, increased

patrols can be conducted without requiring new or altered facilities. Therefore, construction impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-3). Potential construction impacts would cease with the completion of work and would not generate additional permanent demand for police protection. Therefore, Alternative 1 YRDP construction would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

YRDP Impact PS-Alt1-4: Operational Impacts on Police Protection Services

Alternative 1 YRDP non-flow operations and maintenance activities would be the same as under the Proposed Projects. Compared to the Proposed Projects, Alternative 1 includes changes in flows, but these changes would not lead to additional demand for police protection services. Therefore, Alternative 1 YRDP operational impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-4).

New recreation facilities would accommodate an increased number of visitors, which could potentially increase the number of incidents requiring law enforcement services. However, the anticipated use of recreational facilities is not expected to require additional law enforcement personnel or facilities. In a comment letter on the FEIS, the Yuba County Sheriff's Department did not raise concerns about the need for increased personnel or facilities, Therefore, Alternative 1 YRDP operations would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

Narrows Impact PS-Alt1-1: Operational Impacts on Fire Protection Services

Narrows Project operations and maintenance would be the same under Alternative 1 as under the Proposed Projects. Therefore, Alternative 1 Narrows Project operational impacts would be similar to those under the Proposed Projects scenario (see Narrows Impact PS-PP-1).

Yuba Water would implement for the Narrows Project the *Fire Prevention and Response Plan*, which would reduce the likelihood of fire from Narrows Project operations. There are no recreational facilities managed by Yuba Water in the lower Yuba River; therefore, Narrows Project operations would not generate additional demand for fire protection. Alternative 1 Narrows Project operations would have **no impact** associated with the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts.

Narrows Impact PS-Alt1-2: Operational Impacts on Police Protection Services

Narrows Project operations and maintenance would be the same under Alternative 1 as under the Proposed Projects. Therefore, Alternative 1 Narrows Project operational impacts would be similar to those under the Proposed Projects scenario (see Narrows Impact PS-PP-2).

While dam/hydroelectric operations would change, such changes would not be substantial, and none of these operations would require additional police protection services. There are no recreational facilities managed by Yuba Water in the lower Yuba River. Therefore, Alternative 1 Narrows Project operations would have **no impact** associated with the provision of new or

physically altered police protection facilities, the construction of which could cause significant environmental impacts.

23.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact PS-Alt2-1: Construction Impacts on Fire Protection Services

Alternative 2 YRDP construction activities would be the same as under the Proposed Projects. Therefore, construction impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-1). Yuba Water would require all work involving construction vehicles and equipment to comply with equipment specifications and applicable regulations regarding fire safety. As such, YRDP construction would not place additional permanent demands for fire protection services on local fire agencies. Therefore, Alternative 2 YRDP construction would have **no impact** associated with the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts.

YRDP Impact PS-Alt2-2: Operational Impacts on Fire Protection Services

Alternative 2 YRDP non-flow operations and maintenance activities would be the same as under the Proposed Projects. Compared to the Proposed Projects, Alternative 2 includes changes in flows, but these changes would not lead to additional demand for fire protection services nor increase the likelihood of causing fires that would require such services. Therefore, Alternative 2 YRDP operational impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-2).

The YRDP would implement a *Fire Prevention and Response Plan*, which would reduce the likelihood of fire from YRDP O&M. Recreation facilities on USFS lands, which includes all YRDP recreation facilities, would observe the USFS standards for recreation sites. Therefore, Alternative 2 YRDP operations would not require the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts. Impacts would be **less than significant**.

YRDP Impact PS-Alt2-3: Construction Impacts on Police Protection Services

Alternative 2 YRDP construction activities would be the same as under the Proposed Projects. While construction would involve equipment and materials that may be targets of theft, increased patrols can be conducted without requiring new or altered facilities. Therefore, construction impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-3). Potential construction impacts would cease with the completion of work and would not generate additional permanent demand for police protection. Therefore, Alternative 2 YRDP construction would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

YRDP Impact PS-Alt2-4: Operational Impacts on Police Protection Services

Alternative 2 YRDP non-flow operations and maintenance activities would be the same as under the Proposed Projects. Compared to the Proposed Projects, Alternative 2 includes changes in

flows, but these changes would not lead to additional demand for police protection services. Therefore, Alternative 2 YRDP operational impacts would be the same as those under the Proposed Projects scenario (see YRDP Impact PS-PP-4).

New recreation facilities would accommodate an increased number of visitors, which could potentially increase the number of incidents requiring law enforcement services. However, the anticipated use of recreational facilities is not expected to require additional law enforcement personnel or facilities. In a comment letter on the FEIS, the Yuba County Sheriff's Department did not raise concerns about the need for increased personnel or facilities, Therefore, Alternative 2 YRDP operations would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

Narrows Impact PS-Alt2-1: Operational Impacts on Fire Protection Services

Narrows Project non-flow operations and maintenance would be the same under Alternative 2 as under the Proposed Projects. Compared to the Proposed Projects, Alternative 2 includes changes in flows, but these changes would not lead to additional demand for fire protection services nor increase the likelihood of causing fires that would require such services. Therefore, operational impacts would be similar to those under the Proposed Projects scenario (see Narrows Impact PS-PP-1).

Yuba Water would implement for the Narrows Project the *Fire Prevention and Response Plan*, which would improve public safety. There are no recreational facilities managed by Yuba Water in the lower Yuba River; therefore, Narrows Project operations would not generate additional demand for fire protection. Alternative 2 Narrows Project operations would have **no impact** associated with the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts.

Narrows Impact PS-Alt2-2: Operational Impacts on Police Protection Services

Narrows Project non-flow operations and maintenance would be the same under Alternative 2 as under the Proposed Projects. Compared to the Proposed Projects, Alternative 2 includes changes in flows, but these changes would not lead to additional demand for fire protection services nor increase the likelihood of causing fires that would require such services. Therefore, Alternative 2 Narrows Project operational impacts would be similar to those under the Proposed Projects scenario (see Narrows Impact PS-PP-2).

While dam/hydroelectric operations would change, such changes would not be substantial, and none of these operations would require additional police protection services. There are no recreational facilities managed by Yuba Water in the lower Yuba River. Therefore, Alternative 2 Narrows Project operations would have **no impact** associated with the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

23.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact PS-NP-1: Construction Impacts on Fire Protection Services

No construction work would occur under the No Project Alternative. As such, there would be no demand for public services such as fire protection that would be generated by construction activities. N**o impact** would occur.

YRDP Impact PS-NP-2: Operational Impacts on Fire Protection Services

Under the No Project Alternative, Yuba Water would continue existing non-hydropower YRDP operations and maintenance for water supply and flood management purposes. These ongoing activities already occur under the Existing Condition and therefore would not require additional fire protection services. Therefore, **no impact** would occur.

YRDP Impact PS-NP-3: Construction Impacts on Police Protection Services

No construction work would occur under the No Project Alternative. As such, there would be no demand for public services such as police protection that would be generated by construction activities. N**o impact** would occur.

YRDP Impact PS-NP-4: Operational Impacts on Police Protection Services

Under the No Project Alternative, Yuba Water would continue existing non-hydropower YRDP operations and maintenance for water supply and flood management purposes. These ongoing activities already occur under the Existing Condition and therefore would not require additional police protection services. Therefore, **no impact** would occur.

Narrows Impact PS-NP-1: Operational Impacts on Fire Protection Services

Under the No Project Alternative, Yuba Water would continue existing non-hydropower Narrows Project operations and maintenance for water supply and flood management purposes. These ongoing activities already occur under the Existing Condition and therefore would not require additional fire protection services. Therefore, **no impact** would occur.

Narrows Impact PS-NP-2: Operational Impacts on Police Protection Services

Under the No Project Alternative, Yuba Water would continue existing non-hydropower Narrows Project operations and maintenance for water supply and flood management purposes. These ongoing activities already occur under the Existing Condition and therefore would not require additional police protection services. Therefore, **no impact** would occur.

23.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensings) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent project-level environmental documents)

and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

23.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

Only those projects that could affect public services described in this chapter are included in the qualitative evaluation that is presented in subsequent sections of this chapter. The geographical scope of the cumulative analysis is the Yuba River watershed, which is where the public services that may experience cumulative effects are located, along with projects that could potentially impact these public services. Because fire and police protection services are the only public services potentially impacted by the Proposed Projects and Alternatives, the cumulative impact analysis is similarly limited to fire protection and police protection services.

Most of the projects described in Chapter 4 are not expected to result in increased demand for public services in the geographical scope and therefore would not contribute to cumulative impacts to public services. Only a limited number of projects are considered to have the potential to cumulatively impact public services and are specifically considered qualitatively in the cumulative impacts analysis. These include the following:

FERC Hydropower Projects in the Yuba River Watershed

- *Yuba-Bear Hydroelectric Project*
- Upper Drum-Spaulding Hydroelectric Project
- Lower Drum Hydroelectric Project

Flood Control Projects

- *500-Year Flood Protection Project*
- Marysville Ring Levee
- Yuba River North Training Wall Project

Ecosystem Restoration and Fisheries Improvement Projects

- *'Inimim Forest Restoration Project*

Other Local Projects in the Yuba Region

- *Camptonville Biomass Plant*
- North Yuba Forest Partnership
- Yuba Foothills Healthy Forest Project
- Upper Yuba Headwaters Forest Restoration Project
- Yuba Roadside Fuel Treatment Project

These projects are described in Chapter 4, and their impacts related to public services are addressed below.

All the forest restoration projects listed above are in the area upstream of Englebright Dam. The purpose of these projects is to reduce fire risk by removing vegetation through prescribed burning, mechanical/manual treatment, and creation of firebreak among other methods. The 'Inimim Forest Restoration Project is more focused on the restoration of a forest ecosystem; however, the project includes vegetation reduction mechanisms such as those just described. The Camptonville Biomass Plant would support these forest projects by providing a means to dispose of the generated forest biomass through conversion to renewable energy. These projects would at most place infrequent demands on fire and police protection services. For most of these projects, the impacts would be beneficial – the thinning and removal of vegetation would reduce the potential intensity and spread of wildfires, thereby reducing demand for emergency services from fire agencies. The Camptonville Biomass Plant is the only structure to be constructed that may be subject to fire hazards; however, adherence to applicable codes, including the California Fire Code, would reduce the potential calls for fire protection services.

The FERC hydropower projects listed above are also in the area upstream of Englebright Dam. Like the Proposed Projects, these projects would involve relicensing of hydropower facilities. NID is applying for relicensing of the Yuba-Bear Project, while PG&E is applying for relicensing of the Drum-Spaulding projects. The Yuba-Bear relicensing would involve some changes in operations that would affect minimum stream flows, spills from project canals and conduits, and the rate of flow fluctuations following spill events. It also would involve the construction of new facilities such as a new powerhouse and new or rehabilitated recreation facilities. The Drum-Spaulding relicensing would involve the same changes in operations as the Yuba-Bear relicensing, with additional changes specific to Spaulding Dam, Lake Valley Dam, and Drum Canal. This relicensing would also involve new or rehabilitated recreation facilities, as well as the retirement of one powerhouse and the removal of a diversion and associated conveyance system (FEIS 2014).

The FERC hydroelectric projects are likely to generate a demand for public services similar to that of the Proposed Projects, particularly since new recreation facilities are proposed. The YB/DS facilities would likely have impacts similar to those described in YRDP Impact PS-PP-2 - these facilities would likely increase the number of visitors, which could increase the potential risk of fire started by these visitors, either through accident, negligence, or intent. Fire protection and police protection services can be provided to the FERC hydroelectric projects, including recreation facilities. These facilities would be used only seasonally and would be subject to the same federal and state regulations and guidelines for fire protection, along with applicable General Plan policies. The flood control projects are most likely to affect public services. Aside from property damage and potential loss of life, the threat of flooding may require evacuations of residents. All these flooding impacts would place a demand on public services, particularly emergency services provided by fire and law enforcement agencies. The flood control projects are intended to reduce incidents of flooding, which in turn would reduce demand for fire and law enforcement emergency services.

As explained above, the Proposed YRDP Project would have no impacts related to police protection services, and with implementation of the *Fire Prevention and Response Plan,* along with observance of USFS standards, would result in less that significant impacts related to fire protection services. The Proposed Narrows Project would not have any impacts related to public services and therefore would not contribute to an impact under the Cumulative Condition.

Overall, the Proposed Projects and these past, present, and future projects are not expected to create a significant increase in demand for fire and police protection services that would require new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of public services. Accordingly, the Cumulative Condition, including the Proposed Projects, would not result in a significant public services impact relative to the Existing Condition.

YRDP Cumulative Impact PS-PP-1: Potential for significant cumulative public services impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative public services impact would be less than significant. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** relating to public services.

Narrows Cumulative Impact PS-PP-1: Potential for significant cumulative public service impacts resulting from the Narrows Project.

As noted above under Narrows Impacts PS-PP-1 and PS-PP-2, the Proposed Narrows Project would have no public service impacts that could contribute to a potential cumulative impact. In any event, under the Cumulative Condition, including the Proposed Projects, the cumulative public service impact would be less than significant. Accordingly, the Proposed Narrows Project would result in **no cumulative impact** related to public services.

23.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on public services are listed in Section 23.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 23.6.2 above. Alternative 1 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include differences in flow-based operations, those differences do not materially affect the public service considerations in the analysis and conclusions in Section 23.6.2. For the same reasons explained in Section 23.6.2 above, the Cumulative Condition, including Alternative 1, would not result in a significant public service impact relative to the Existing Condition.

YRDP Cumulative Impact PS-Alt1-1: Potential for significant cumulative public service impacts resulting from the YRDP. As noted above, under the Cumulative Condition, including Alternative 1, the cumulative public service impact would be less than significant. Accordingly, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** relating to public services.

Narrows Cumulative Impact PS-Alt1-1: Potential for significant cumulative public service impacts resulting from the Narrows Project.

As noted above under Narrows Impacts PS-Alt1-1 and PS-Alt1-2, Narrows Project operations under Alternative 1 would have no public service impacts that could contribute to a potential cumulative impact. In any event, under the Cumulative Condition, including Alternative 1, the cumulative public service impact would be less than significant. Accordingly, Narrows Project operations under Alternative 1 would result in **no cumulative impact** relating to public services.

23.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on public services are listed in Section 23.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 23.6.2 above. Alternative 2 would include all of same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include differences in flow-based operations, those differences do not materially affect the public service considerations in the analysis and conclusions in Section 23.6.2. For the same reasons explained in Section 23.6.2 above, the Cumulative Condition, including Alternative 2, would not result in a significant public service impact relative to the Existing Condition.

YRDP Cumulative Impact PS-Alt2-1: Potential for significant cumulative public service impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative public service impact would be less than significant. Accordingly, YRDP construction and operations under Alternative 2 would result in a **less than significant cumulative impact** relating to public services.

Narrows Cumulative Impact PS-Alt2-1: Potential for significant cumulative public service impacts resulting from the Narrows Project.

As noted above under Narrows Impacts PS-Alt2-1 and PS-Alt2-2, Narrows Project operations under Alternative 2 would have no public service impacts that could contribute to a potential cumulative impact. In any event, under the Cumulative Condition, including Alternative 2, the cumulative public service impact would be less than significant. Accordingly, Narrows Project operations under Alternative 2 would result in **no cumulative impact** relating to public services.

23.7 Literature Cited

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CHAPTER 24

UTILITIES AND SERVICE SYSTEMS

24.1 Introduction

This section describes the environmental setting and regulatory framework for utilities and service systems. As indicated in the Environmental Checklist in CEQA Guidelines Appendix G, utilities and service systems typically include potable water, wastewater, storm drainage, solid waste, and telecommunications. They also may include electric power and natural gas systems; electrical systems are discussed in Chapter 7, Energy. Since the Proposed Projects and the alternatives would not affect any existing natural gas systems in the Project Area, impacts on natural gas systems are not analyzed further.

This chapter identifies impacts of the Proposed Projects on utility facilities during construction, O&M. The study area for utilities and service system impacts refers to the areas within and directly adjacent to the Project Area.

24.2 Environmental Setting

24.2.1 Water Supply

There are several water providers in the Project Area. These providers, in turn, rely on both surface and groundwater sources. The eastern portion of Yuba County, along with the relevant portions of Nevada and Sierra Counties, are within the Sierra Nevada foothill and mountain region. This area relies primarily on surface water supplies due to the underlying granite bedrock that, with limited exceptions, does not provide sufficient volumes of dependable groundwater.

The Yuba River serves as the single largest source of surface water supplies in Yuba County (Yuba County 2011a). Other sources of surface water in the area include the Bear River and Deer Creek, which through NID, provide water for much of southwestern Nevada County (NID 2021).

24.2.1.1 Yuba Water Supply and Distribution

Yuba Water is a major water rights holder on the Yuba River and manages surface water supplies in Yuba County. Chapter 5, Surface Water Resources, discusses this in more detail.

Yuba Water stores and diverts water for consumptive use. Yuba Water's permits direct diversions of up to 1,593 cfs from the Lower Yuba River from September 1 to June 30 for irrigation and other uses, and up to 1,250,000 acre-feet from October 1 to June 30 for storage in New Bullards Bar Reservoir. Yuba Water provides approximately 274,255 acre-feet of wholesale water supplies to its eight member units: Brophy Water District, Browns Valley Irrigation District, Cordua Irrigation District, Dry Creek Mutual Water Company, Hallwood Irrigation District, Ramirez Water District, South Yuba Water District, and Wheatland Water District. In addition, three of the member units - Browns Valley Irrigation District, Cordua Irrigation District, and Hallwood Irrigation District - hold water rights totaling approximately 161,469 acre-feet.

Yuba Water has actively facilitated the conjunctive use of groundwater by its member units to reduce demand for surface water in times of limited supply. It also has increased Statewide water supplies by making surface water available for transfers to meet environmental or other demands through groundwater substitution.

24.2.1.2 Yuba Water On-Site Facilities

The existing facilities in the Project Area generally use little water in their operations. However, the YRDP recreation facilities at New Bullards Bar Reservoir are served by an on-site water system. The system consists of a water treatment facility located on the north side of New Bullards Bar Dam at the west end of the Cottage Creek Boat Launch facility on Yuba Water land. The water treatment facility consists of the following primary elements (YCWA 2014b):

- A water treatment building containing filters, valves, gages, electronics, office, pumps and equipment;
- Two 10,000-gallon storage tanks;
- Concrete dechlorination basin; and
- Separate raw water and treated water piping systems.

In addition to the two storage tanks at the water treatment plant, the water system includes two water storage tanks along the water distribution system that provide a total of 43,000 gallons of storage. These include a 5,000-gallon steel tank near the Cottage Creek Boat Launch maintenance yard and a 28,000-gallon concrete storage tank with a valve station near the Sunset Vista Point (YCWA 2014b).

Raw water for the water treatment facility is provided by New Bullards Bar Reservoir at the low-level outlet of New Bullards Bar Dam. Yuba Water pumps and pipes the raw water up the downstream side (north side) of the dam and under Cottage Creek Campground Access Road at the entrance to the Cottage Creek Boat Launch facility, where the source water enters the water treatment facility (YCWA 2014b). Yuba Water pumps an average of six acre-feet per year from New Bullards Bar Reservoir to supply water to the treatment facility for domestic and recreational use (FERC 2019).

A distribution pipeline provides water directly from the water treatment facility to the Cottage Creek Boat Launch. The treated water leaves the water treatment facility and is piped underground directly to the Cottage Creek Boat Launch facility along the northern boundary of the facility parking area. Roughly halfway along the parking area, there is a “T” junction in the piping, where the piping emerges above ground and water may either be pumped up the hill to a storage tank near the marina storage/maintenance yard north of the boat launch parking area or continue down to the marina. This segment is entirely on Yuba Water land (YCWA 2014b).

A second distribution pipeline delivers treated water from the facility to storage tanks near Sunset Vista Point. Treated water serving the recreation facilities on the south side of New Bullards Bar Reservoir along Marysville Road leaves the water treatment facility and is piped across New Bullards Bar Dam (upstream face near crest) and then underground across the entrance road to the upstream side of the dam, where a two-inch-diameter pipe carries it aboveground, across the

upstream side, just below the crest of the dam to the south side of the dam. Here the pipe goes underground near the Dam Overlook along the north side of Marysville Road until it reaches the south side of the Forest Service's administrative site (non-project) near Sunset Vista Point. The pipe travels through the administrative site, mostly between the site road and the reservoir, until it connects to the top of both water storage tanks at the north side of the Forest Service administrative site. This segment is on Yuba Water and NFS land. The primary storage of treated water occurs near the Forest Service's administrative site (non-project on NFS land), where a 28,000-gallon concrete tank has been installed (YCWA 2014b).

A third distribution pipeline, approximately eight inches in diameter, connects the Sunset Vista Point water storage tanks to the YRDP recreation facilities along Marysville Road - Hornswoggle Group Campground, Schoolhouse Campground, and the Dark Day complex. The mainline pipe then turns and follows Marysville Road north and delivers the water to the Project recreation facilities along Marysville Road. The connection to Hornswoggle Group Campground occurs at a "T" junction in the main distribution line several hundred feet before the Schoolhouse Campground access road. The treated water is diverted off the main distribution line underneath Marysville Road to the south to Hornswoggle Group Campground, where water is piped underground to the campground water facilities The connection to Schoolhouse Campground occurs at a "T" junction in the main distribution line several hundred feet past the Schoolhouse Campground access road, near the middle of the facility complex. The treated water is connected underground to the campground water facilities. This segment is on Yuba Water and NFS land (YCWA 2014b).

The connection to the Dark Day recreation complex occurs at a "T" junction in the main distribution line just before the Dark Day access road. The main distribution line then follows the west side of Dark Day Road, where it connects to the Dark Day Overflow Boat Ramp Parking Area, Dark Day Campground, Dark Day Picnic Area and Dark Day Boat Launch. The main distribution line runs along the western edge of the road that accesses Dark Day Campground and Picnic Area with several "T" junctions to run treated water to the campsites and picnic area along the road; as well as east to the water hydrant at Dark Day Boat Launch facility (YCWA 2014b).

A 2012 condition summary indicated that the primary below-ground infrastructure of the water system is more than 40 years old. Based on incidental information from both Yuba Water staff, which operates the water treatment facility and occasionally maintains aspects of the water system, and Forest Service staff, which regularly maintains the above-ground and some segments of the below-ground facilities, it is understood that the infrastructure is showing its age. Further, the above-ground facilities at recreation facilities are generally in fair condition and categorically do not meet accessible guidelines (YCWA 2017).

24.2.2 Stormwater Drainage

The need for stormwater drainage facilities depends on the volume of precipitation and inflow, the amount of urban development, the rate of groundwater infiltration (percolation), downstream flood water capacity, water quality, and evolving regulatory standards. To control stormwater runoff, Yuba County operates and maintains a drainage system consisting of roads with drainage systems, catch basins, water basins, detention basins, constructed wetlands, artificial channels, curbs,

gutters, ditches, sumps, pumping stations, storm drain inlets, and storm drains, which provide stormwater drainage to unincorporated county lands (Yuba County 2011a).

The drainage facilities in unincorporated Yuba County are located mainly in more developed areas in the southwestern portion. In the Project Vicinity, which is much less developed, most of the rainfall from winter storms either percolates into the ground or drains into nearby stream channels or other bodies of water such as reservoirs. There are road drainage features such as culverts and drainage ditches (FERC 2019). However, no larger-scale storm drainage facilities have been constructed, including within the recreation facilities. Similar conditions exist in Nevada County and Sierra County portions of the Project Area.

24.2.3 Wastewater

There are 11 State-regulated wastewater treatment facilities in Yuba County, including facilities operated by the Olivehurst Public Utilities District, the Linda County Water District, River Highlands Community Service District, Beale Air Force Base, and the cities of Marysville and Wheatland. There are also several private sewer systems operated by various facilities throughout the County, such as the Toyota Amphitheatre near Wheatland, campgrounds, and mobile home parks. In addition to these larger-scale wastewater treatment facilities, many properties throughout the County, but particularly in the more rural areas, use private septic systems (Yuba County 2011b).

The Project Area is not located within the boundaries of the 11 State-regulated wastewater treatment facilities in Yuba County. However, as noted in Chapter 2, Project Description, existing wastewater systems of septic and leach fields serve recreation facilities, along with floating comfort stations. No larger-scale wastewater systems serve the Nevada County and Sierra County portions of the Project Area.

24.2.4 Solid Waste

Solid waste collection services in Yuba County, including garbage pickup, yard waste hauling, and recycling are provided by Recology Yuba-Sutter, which serves both Yuba and Sutter Counties and Beale Air Force Base. Recology Yuba-Sutter operates two transfer stations – one in Marysville and one in Brownsville. Garbage pickup service in unincorporated Yuba County is mandatory in areas defined in Yuba County Code Chapter 7.05, which are mainly the communities of Linda, Olivehurst, and Plumas Lake. The Project Area is outside the mandatory collection areas.

Once solid waste is collected and sorted at the transfer stations, it is disposed of at the Recology Ostrom Road Landfill, approximately four miles north of Wheatland. The facility consists of 261 acres and is permitted to accept municipal and industrial solid waste, agricultural waste, ash, wastewater treatment sludge, construction and demolition debris, green waste and food waste, contaminated soils, tires, and nonfriable asbestos. As of June 30, 2024, the Ostrom Road Landfill has a remaining capacity of 32,225,000 cubic yards and a maximum permitted throughput of 3,000 tons per day. It is estimated that this landfill has capacity to accept solid waste to the year 2066 (CalRecycle 2024).

In Nevada County, the Solid Waste Division of the County's Public Works Department oversees garbage disposal, recycling services, and transfer station operations, except in jurisdictions that have contracted with solid waste companies for service. Collected solid waste is eventually taken to the Sacramento Recycling and Transfer Station in Sacramento County for recycling, sorting, and disposal.

In Sierra County, the Public Works and Transportation Department provides solid waste operations support with the management of five transfer stations. This support includes the development and management of Sierra County recycling programs. Solid waste is taken by County residents to these five transfer stations. Sierra County also has a hauling agreement with Intermountain Disposal for curbside pickup service for residences and businesses requesting this service.

24.2.4.1 Large Woody Material Disposal

Yuba Water collects trees and other debris, referred to as LWM, that accumulates in New Bullards Bar Reservoir and disposes of the LWM by burning. Historically, floating material, mostly wood, begins to accumulate on the surface of New Bullards Bar Reservoir during spring runoff in April and May when the reservoir is filling. The material accumulates at the upper end of the reservoir or in coves, but it can disperse throughout the reservoir based on wind direction and speed, and the dispersal pattern may change from week to week. The amount of floating material varies by year, with the most material occurring in wet years following a series of dry years (Yuba Water 2014b).

Estimates have quantified the volume of wood stored in New Bullards Bar Reservoir in 1998 and 2006. Aerial photography examinations (Figure 24.2-1) resulted in an estimated 34,400 yd^3 of wood accumulated on New Bullards Bar Reservoir during 1998, and an estimated 110,000 yd^3 accumulated on New Bullards Bar Reservoir during 2006 (A. Senter unpublished data, as cited in USFWS 2010).



Figure 24.2-1. Large Woody Material in New Bullards Bar Reservoir (YCWA 2006).

Yuba Water presently manages the LWM that is washed into New Bullards Bar Reservoir from the North Yuba River Basin upstream. Although no formal LWM Management Plan has been established, Yuba Water methods currently involve pushing the floating LWM into shallow coves of New Bullards Bar Reservoir using tug boats, and subsequently gathering and removing the dry LWM from the reservoir using a boom (G. Rabone, YCWA, 2011, pers. comm.). Accumulated wood from New Bullards Bar Reservoir is burned every one to three years (USFWS 2010). There is currently no LWM plan for the lower Yuba River area.

24.3 Regulatory Setting

Chapter 7, Energy, describes existing conditions and regulations addressing electricity generation, particularly from Yuba Water facilities. These are also pertinent to electrical utilities.

24.3.1 Federal

24.3.1.1 Forest Service Handbook 2309.13

In 2018, the USFS adopted Forest Service Handbook 2309.13 - Recreation Site Handbook. Chapter 10 of the Handbook addresses the planning and design of developed recreation sites and facilities. More specifically, Section 12.7 of Chapter 10 provides guidance on the installation of

water, toilet, and waste facilities. When potable water is provided at developed recreation sites, water hydrants should be located so that each can serve several use areas or camping units. The maximum distance of hydrants from day use sites or camping units is dependent on ROS setting and can vary from 100 to 300 feet. All potable water facilities at developed recreation sites must comply with Forest Service Manual 7420, the Forest Service Outdoor Recreation Accessibility Guidelines, and federal, State, and local regulations pertaining to drinking water sources (USFS 2018).

Developed recreation should design and install RV sanitary stations where commercial RV sanitary stations are not available within a reasonable driving distance, and on-site sewer or septic utilities are present. Gray water infiltration sumps may be provided at a developed recreation site when necessary to prevent pollution and/or erosion (USFS 2018).

Regarding solid waste, the design and maintenance of trash receptacles should prevent access or disturbance by wildlife. Where practicable, large, centralized trash receptacles or clusters of receptacles shall be used, which are usually more cost-effective than small, scattered receptacles. Where appropriate, trash receptacles at developed recreation sites should be screened to blend with natural features and constructed facilities at the sites, and they should be co-located with other infrastructure. Consider amenities to facilitate separation of recyclable materials from other waste should be considered (USFS 2018).

The Proposed Projects include new campgrounds that would be located on USFS land. Therefore, these campgrounds would be subject to the provisions of Forest Service Handbook 2309.13.

24.3.1.2 Other Forest Service Guidelines

The USFS has developed other guidelines and policies for the design of Forest Service recreation facilities, aside from Forest Service Handbook 2309.13. These guidelines and policies will be followed in the design and planning of recreation facilities and replacement of existing facilities on NFS land. Below is a summary of some of the most relevant guidance and policy documents that will be used for the design of new and replacement facilities, and rehabilitation of existing recreation facilities on NFS land, as noted in the *Recreation Facilities Plan*:

- Forest Service Manual 2300 – Recreation, Wilderness, and Related Resource Management, Chapter 2330 – Publicly Managed Recreation Opportunities. This chapter addresses Forest Service planning, design, O&M of developed recreation sites such as campgrounds, picnic areas, observation sites, developed swimming areas, and visitor and interpretive centers.

- The Built Environment Image Guide. Provides design and architectural guidance for built structures, including recreational facilities, which are tailored to regional locations.

- Forest Service Outdoor Recreation Accessibility Guidelines. Provides guidance for maximizing accessibility of outdoor recreation areas in the NFS, while protecting the unique characteristics of their natural setting.

- Architectural Barriers Act Accessibility Guidelines. The Architectural Barriers Act requires facilities designed, built, altered, or leased by, for or on behalf of a federal agency, or with federal funds, to comply with the applicable accessibility guidelines/ standards. The Forest Service Outdoor Recreation Accessibility Guidelines, described above, implement the Architectural Barriers Act.

- Forest Service Trail Accessibility Guidelines for trails and pathways.

- Sign and Poster Guidelines for the Forest Service.

24.3.2 State

24.3.2.1 Solid Waste State Legislation

AB 939, the California Integrated Waste Management Act, enacted in 1989 and subsequently amended, required local jurisdictions to divert at least 50% of their solid waste from landfills by 2000. A more recent bill, AB 341, increased the diversion requirement to 75% by 2020. Beginning on April 1, 2016, AB 1826 phases in mandatory organic waste recycling requirements for businesses, including multifamily properties of five or more units.

24.3.3 Regional/Local

24.3.3.1 Lower Yuba River Accord

As described in Chapter 2, Project Description, the Lower Yuba River Accord is a comprehensive, consensus-based program to protect and enhance aquatic habitat in the lower Yuba River downstream of Englebright Dam. Among the agreements that are part of the Accord is the Water Purchase Agreement, under which DWR purchases water from Yuba Water, a portion of which is provided by the Yuba Accord's minimum streamflows, for CALFED's Environmental Water Account and for State Water Project and Central Valley Project contractors. In addition, the Conjunctive Use Agreements specify the terms of the Yuba Accord's groundwater conjunctive-use program involving seven of Yuba Water's Member Units.

24.3.3.2 County Environmental Health Regulations

Yuba, Nevada, and Sierra Counties all have Environmental Health Departments that oversee various programs that protect the health, safety, and well-being of the public and preserve the quality of the environment. Among these programs are those that regulate water wells and septic systems. The departments confirm that all wells and soil borings are constructed, repaired, and destroyed by permit and according to State and local standards. They also ensure that the health of the public and the environment is protected from the improper disposal of sewage from on-site wastewater treatment systems, including septic systems and private sewer systems.

24.3.3.3 County General Plans

Yuba County General Plan

The Yuba County 2030 General Plan has as an overall goal the improvement of the quality of life. As part of achieving this goal, the County pledges to encourage efficient, cost-effective, and sustainable infrastructure. The Community Development Element of the Yuba County 2030 General Plan contains goals and policies relevant to utilities and service systems. The following goals and policies of these elements are applicable to utilities and service systems (Yuba County 2011b):

Community Development Element

GOAL CD12. Ensure high-quality public services, infrastructure, and facilities with adequate capacity to meet the needs of Yuba County's existing and future residents, businesses, industries, and employers.

- Policy CD12.1: New developments will be required to demonstrate the availability of adequate water supply and infrastructure, including during multiple dry years, prior to approval.

- Policy CD12.2: New developments will be required to construct and dedicate and/or fund on a fair-share basis wastewater collection, conveyance, and treatment facilities consistent with applicable local, State, and federal standards.

- Policy CD12.3: The County will implement stormwater master plans designed to provide collection, detention, and conveyance consistent with local standards for developed areas within the Valley Growth Boundary. In general, new developments will be required to demonstrate no net increase in stormwater runoff prior to approval. [Note: the Project Area is not within the Valley Growth Boundary.]

Policy CD12.4: The County will approve new development projects only if adequate capacity exists to accommodate solid waste demand, including processing, recycling, transportation, and disposal. Nevada County General Plan

Like the Yuba County General Plan, the Nevada County General Plan also addresses utilities and service systems. The General Plan has four central themes that articulate the vision for County development. Themes pertinent to utilities include 1) sustaining a quality environment, and 2) "Planned land use patterns will determine the level of public services appropriate to the character, economy and environment of each region (Nevada County 2014).

The Public Facilities and Services Element of the Nevada County General Plan contains goals, objectives, and policies relevant to utilities and service systems. These include the following (Nevada County 2014):

Public Facilities and Services Element

GOAL 3.1: Provide for public facilities and services commensurate with development type and intensity.

Objective 3.1: Public facilities and services shall be directed as follows: a higher level to Community Regions and a lower level to Rural Regions.

Policy 3.1: The levels of service and provision of public facilities in Community Regions shall be based upon improving the capacity of public facilities to serve higher levels of development directed to Community Regions. The levels of service and provision of public facilities in Rural Regions shall be based upon limiting the amount of development to ensure that adequate facilities are available. Planning for future public facilities and services in Community and Rural Regions shall be based upon the following criteria:

COMMUNITY REGIONS

a. public water and sewer
b. retention of existing emergency response time
c. intercommunity-transit

RURAL REGIONS

Rural Centers

a. public or on-site community water and sewer systems
b. decreased emergency response times

Rural Areas

a. individual septic and wells or on-site community water and sewer systems
b. decreased emergency response time
c. limited transit

Policy 3.12: Encourage all other districts serving the County (including school, utility, cemetery, park, and fire districts) to develop and to regularly update a Master Service Plan based on realistic growth which specifies a district's policies and requirements for facilities based upon buildout of the County's General Plan. The County shall review all proposed facility sites in the districts' Facilities Master Plans for consistency with the General Plan.

Sierra County General Plan

Like the two other General Plans, the Sierra County General Plan addresses utilities and service systems. One of the goals of the General Plan is to provide for essential public facilities and services and allow for the provision of quasi-public facilities and services which are in keeping with the customs, culture, and heritage of Sierra County (Sierra County 2012).

The Public Facilities Element of the Sierra County General Plan contains policies relevant to the public services analyzed in this chapter. These include the following (Sierra County 2012):

> Policy 1: Ensure the provision of essential public and quasi-public facilities in a timely manner based on growth projections, actual growth rates, and planned pattern of land uses.
>
> Policy 4: Differentiate between rural and community area levels of service to ensure cost-effective provision of services.
>
> Policy 5: Ensure that adequate and safe water supply is available to all users.
>
> Policy 9: Cooperate with utility companies in locating needed facilities in keeping with visual and landform disturbance policies in this General Plan.
>
> Policy 14: Provide for refuse disposal and collection to meet the needs of County residents.

24.4 Impact Assessment Methodology

The impact analysis for utilities and service systems follows the approach in the general overview described in Chapter 4, Framework for Environmental Analysis. The geographical scope of the impact analysis on utilities and service systems is the Project Area and Vicinity.

A desktop analysis was completed to collect and analyze information related to utilities and service systems in the Project Area. Information was provided by the Yuba County General Plan EIR and from the Nevada County and the Sierra County websites. Appropriate information from the 2019 FEIS was also included, although FEIS discussion on utilities and service systems was limited to water supply.

YRDP construction-related activities for Alternatives 1 and 2 are the same as those described for the Proposed Projects. The Narrows Project would not involve any construction activities. Therefore, construction impacts related to the Narrows Project are not analyzed in this chapter.

24.4.1 Impact Indicators and Significance Criteria

For utilities and service systems, impact indicators and significance criteria rely upon the CEQA Guidelines Appendix G: Environmental Checklist Form. Under CEQA Guidelines Appendix G, a project may have a significant impact on utilities and service systems if it would:

- **Impact UTIL-1:** Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- **Impact UTIL-2**: Lack of sufficient water supplies to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- **Impact UTIL-3:** Result in a determination by the wastewater treatment provider that serves or may serve the Project that it lacks adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments.

- **Impact UTIL-4:** Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
- **Impact UTIL-5:** Not comply with Federal, State, and local management and reduction statutes and regulations related to solid waste.

24.5 Environmental Impact Analysis

24.5.1 Proposed Projects compared to the Existing Condition

YRDP Impact UTIL-PP-1: Relocation or Construction of New or Expanded Infrastructure

The Proposed Projects would involve improvements to YRDP facilities, as described in Chapter 2, Project Description. This chapter focuses on improvements associated with utility infrastructure, including those associated with electrical systems described in Chapter 7, Energy. Most utility improvements would occur within the footprints of existing facilities. Impacts of these facility improvements on environmental issues such as air quality and water quality, among others, are analyzed in the appropriate technical chapter of this DEIR.

The YRDP proposed construction associated with the first segment of the underground water distribution system from the water treatment facility at Cottage Creek Boat Launch to Dark Day Road would be replaced, as well as the underground water distribution system from the end of this first segment above to the Dark Day Campground, Picnic Area and Boat Launch complex. No additional land or right-of-way would be required for these improvements.

Rehabilitated YRDP recreation facilities would include septic systems, as described in Chapter 2, Project Description. No wastewater treatment services are currently provided, and no new wastewater treatment facilities would be constructed.

Relocation of existing utility facilities, such as electrical and water lines, may occur within the potential construction areas, though specific lines are unknown at this time. For relocation of the utilities, coordination with the utility owners/providers would be required in advance of construction to identify infrastructure locations and appropriate protection measures, and temporary bypasses may be required for some. Any required utility relocation would need to be conducted either in advance of or concurrent with Project construction activities. Mitigation Measure MM-UTIL-1, described below, would ensure that any utility lines that would need to be relocated would be identified and that coordination with appropriate owners/providers would occur prior to any relocation.

As Yuba Water constructs additional recreational facilities, as scheduled in the *Recreation Facilities Plan*, Yuba Water will rehabilitate, improve, and upgrade the capacity of the water treatment facility as needed to meet the water system demands of the existing and new recreation facilities. As noted in Chapter 2, Project Description, Yuba Water will be replacing and upgrading the water delivery system piping in the first three years of the new license, which Yuba Water expects will improve the overall water supply system. Thus, at a minimum, Yuba Water will wait to see the impacts that the delivery system upgrades will have on the overall system supply before

addressing any further treatment facility upgrades. The same would apply to the rehabilitation, improvement, and upgrading of the water storage tanks, as needed, to meet the water system demands of the existing and new recreation facilities. At this time, improvements to these facilities are speculative and thus outside the scope of CEQA analysis. Any future improvements to these water facilities would be subject to applicable regulations and would be subject to CEQA review, with mitigation measures to be implemented if necessary.

The *Recreation Facilities Plan* requires the development of a Site Development Plan and a Construction Plan for a recreation project. In particular, the Construction Plan includes a description of the proposed enhancements and the construction methods and equipment, among additional details. The designs of rehabilitated and replaced facilities will meet current, applicable USFS guidelines, discussed in the Regulatory Setting section above, that exist during the design phase for these enhancements. During the license term, Yuba Water anticipates that all water systems will need to be upgraded at least once. Upgrading generally includes replacing the existing distribution piping, connections, and water hydrants, while maintaining the same system design and footprint, as warranted. However, during the planning for replacement of the water distribution system, Yuba Water will evaluate if the system footprint should be reviewed to determine if there are alternative designs or technologies that can be reasonably implemented that would better serve recreation users (YCWA 2014a). As noted, new campgrounds would be subject to the provisions of Forest Service Handbook 2309.13, as they would be located on NFS land.

Although relocation of existing utilities could result in interruptions in service, any interruptions would be temporary in nature, and service would be restored as quickly as possible. As described in Chapter 2, Project Description, the primary driver of the schedule of recreation facility improvements, as set forth in the *Recreation Facilities Plan*, is the replacement of the existing main line of the recreational facility water delivery system. After this improvement, other improvements associated with the recreation facilities would be made as scheduled by the *Recreation Facilities Plan*. Impacts of these other improvements would be confined to the construction areas, and mitigation described below would address any potential encounters with utility infrastructure.

In summary, YRDP construction may involve relocation of utility lines, but mitigation would minimize potential environmental impacts. Installation of new or replacement utility lines at the recreation facilities would be in accordance with the provisions of the *Recreation Facilities Plan*. Therefore, YRDP construction impacts related to the relocation or construction of new or expanded infrastructure would be **less than significant with mitigation incorporated.**

Mitigation Measures

MM-UTIL-1. Prior to the start of construction, Yuba Water will implement the following measures to avoid and minimize potential damage to utilities and infrastructure:

- Coordinate with applicable utility and service providers to implement orderly relocation of utilities that need to be removed or relocated.

- Provide notification of any potential interruptions in service to the appropriate agencies and affected landowners.

- Verify through field surveys and Underground Service Alert service the locations of buried utilities on the construction site, including but not limited to electrical and water lines. Any buried utility lines will be clearly marked in the construction area (e.g., in the field) and on the construction specifications in advance of any earthmoving activities.

- Prepare and implement a response plan that addresses potential accidental damage to a utility line. The plan will identify chain-of-command rules for notification of authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan will include worker training on responses to accidental damage.

- Stage utility relocations prior to and during construction to minimize interruptions in service.

- Coordinate with PG&E to relocate electrical and other transmission lines and associated infrastructure such as power poles.

YRDP Impact UTIL-PP-2: Construction Impacts on Water Supplies

The existing water system would undergo improvements, as discussed in Chapter 2, Project Description, including pipeline improvements and a line extension to Cottage Creek Picnic Area. No new water systems are planned. Construction work would occur in accordance with the requirements of the Recreation Facilities Plan, described in YRDP Impact UTIL-PP-1 above. New Bullards Bar Reservoir has adequate water supply for any water needed by construction activities during normal, dry, and multiple dry years. Therefore, YRDP construction impacts related to water supplies would be **less than significant**. No CEQA mitigation is required.

YRDP Impact UTIL-PP-3: Operations Impacts on Water Supplies

The Proposed Projects involve the redevelopment of YRDP hydropower facilities. No additional water supply would be needed for the O&M of YRDP hydropower facilities beyond that currently provided by New Bullards Bar Reservoir. Water demand from new recreational facilities is expected to be limited, given that these facilities would be only seasonally open and no land area would be irrigated. New Bullards Bar Reservoir has available water supply to meet demands of the new recreation facilities during normal, dry, and multiple dry years. Therefore, while the new facilities would generate an increase in water demand, impacts of YRDP operations related to water supplies would be **less than significant**. No CEQA mitigation is required.

YRDP Impact UTIL-PP-4: Operations Impacts on Wastewater Treatment

As described in Chapter 2, existing septic systems serving YRDP recreational facilities would be improved. The improvements to the recreation facilities would not include wastewater treatment facilities, and there are no wastewater treatment facilities in the Project Vicinity to which the recreation facilities could possibly connect. Therefore, YRDP operational impacts on wastewater treatment would be **less than significant**. No CEQA mitigation is required.

YRDP Impact UTIL-PP-5: Construction Impacts on Solid Waste and Compliance with Solid Waste Regulations

Project construction activities would generate natural and human-generated solid waste. Sources of natural waste related to construction activities would include soil, rocks, cleared vegetation, and woody debris. As described in Chapter 2, Project Description, proposed construction of facilities other than recreation facilities would not entail significant earthwork. For projects involving significant earthwork or vegetation removal, Appendix 2A-3 of this DEIR, which describes the proposed construction schedule for the YRDP, states that construction disposal would be required for the permanent placement of excess excavated materials obtained during construction activities. Five potential disposal areas were identified with a total disposal capacity of 480,000 cubic yards. The estimated quantity of excavated material that would be generated by the YRDP projects is 300,000 cubic yards. Therefore, adequate capacity would exist for disposal of organic waste.

Human-generated solid waste would include construction and structural debris such as roadway pavement. Construction debris would be disposed of at the Recology Ostrom Road Landfill, which is discussed in the Environmental Setting above and has adequate capacity for both construction and operational solid waste. Construction work would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. Therefore, YRDP construction activities would have impacts on solid waste that are **less than significant**. No CEQA mitigation is required.

YRDP Impact UTIL-PP-6: Operations Impacts on Solid Waste and Compliance with Solid Waste Regulations

Changes in YRDP dam and hydropower operations under the Proposed Projects would not result in increased generation of solid waste relative to the Existing Condition. However, the improved and new recreational facilities would generate additional solid waste. As noted in the Environmental Setting above, solid waste in Yuba County is disposed of at the Ostrom Road Landfill, which has adequate capacity at current maximum throughput rates to the year 2066. It is expected that waste generated from the recreation facilities would be disposed of at this landfill. Given the seasonal use of the recreation facilities, the solid waste generated by these facilities would be limited and is not expected to substantially accelerate use of remaining capacity at this landfill.

Consistent with past LWM removal efforts on New Bullards Bar Reservoir, Yuba Water will continue to manage LWM on New Bullards Bar Reservoir. Yuba Water has prepared a *New Bullards Bar Reservoir Floating Material Management Plan* that provides guidance for Yuba Water's annual collection, storage, and disposal of floating material on New Bullards Bar Reservoir. The *New Bullards Bar Reservoir Floating Material Management Plan* describes how the LWM would be collected, where it would be stored (near the Garden Point Boat-In Campground), and the burning of the material, which shall be conducted between September 1 and November 14 and only after two inches of rain falls in a 24-hour period. Burning would be conducted with permits and approvals from the Forest Service and any other agency with jurisdiction over the burning. Since the majority of these activities occur on NFS land, coordination with the Forest Service would be part of the procedures (Yuba Water 2014b).

As discussed in Chapter 2, Project Description, FERC Article 410 states that Yuba Water shall develop and implement a new LWM enhancement plan for the lower Yuba River, which is currently not covered by any LWM plan. The new plan proposed by Yuba Water shall:

- Identify sources of LWM;
- Include provisions to store and transport LWM collected at New Bullards Bar Reservoir downstream to the lower Yuba River;
- Identify suitable size classes of LWM for placement;
- Identify LWM placement locations in the lower Yuba River;
- Consult with relevant agencies and whitewater boating interests (e.g., American Whitewater) on placement plan; and
- Develop a monitoring and mapping process to indicate the stability of these and future enhancements.

Implementation of this new LWM enhancement plan would ensure a comprehensive approach to LWM disposition throughout the Project Area.

The Proposed Projects would comply with applicable federal, state, and local management and reduction statutes and regulations related to solid waste, along with Forest Service and other applicable agency permits and approvals on LWM disposal. Therefore, YRDP operations would have impacts on solid waste that are **less than significant**. No CEQA mitigation is required.

Narrows Impact UTIL-PP-1: Operations Impacts on Utilities and Service Systems

Yuba Water does not propose any changes to existing Narrows Project works or facilities, nor construction of new facilities. None of Yuba Water's proposed conditions would materially alter Narrows Project operations. Therefore, Narrows Project operations would have **no impact** on utilities and service systems, and no CEQA mitigation is required.

Narrows Impact UTIL-PP-2: Operations Impacts on Solid Waste

Yuba Water does not propose any changes to existing Narrows Project works or facilities, nor construction of new facilities. None of Yuba Water's proposed conditions would materially alter Narrows Project operations. Therefore, Narrows Project operations would have **no impact** on solid waste, and no CEQA mitigation is required.

24.5.2 Alternative 1 compared to the Existing Condition

YRDP Impact UTIL-Alt1-1: Relocation or Construction of New or Expanded Infrastructure During Construction

Alternative 1 would involve the same improvements to YRDP facilities as the Proposed Projects and would therefore have the same associated impacts described under YRDP Impact UTIL-PP-1

For the reasons explained above for YRDP Impact UTIL-PP-1, with implementation of Mitigation Measure MM-UTIL-1, Alternative 1 YRDP construction impacts are considered **less than significant with mitigation incorporated**.

YRDP Impact UTIL-Alt1-2: Construction Impacts on Water Supplies

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects and therefore would have the same associated impacts described under YRDP Impact UTIL-PP-2. For the reasons explained above for YRDP Impact UTIL-PP-2, YRDP construction impacts related to water supplies under Alternative 1 would be **less than significant**.

YRDP Impact UTIL-Alt1-3: Operations Impacts on Water Supplies

YRDP operational impacts under Alternative 1 would be similar to those described under YRDP Impact UTIL-PP-3 because Alternative 1 would include the same non-flow YRDP O&M activities as the Proposed Projects. No additional water supply would be needed for the O&M of YRDP hydropower facilities under Alternative 1 beyond that currently provided by New Bullards Bar Reservoir. Accordingly, and for the reasons explained above for YRDP Impact UTIL-PP-3, impacts of YRDP operations related to water supplies under Alternative 1 would be **less than significant**.

YRDP Impact UTIL-Alt1-4: Operations Impacts on Wastewater Treatment

YRDP operational impacts under Alternative 1 would be the same as those described under YRDP Impact UTIL-PP-4 because Alternative 1 would include the same non-flow YRDP O&M activities as the Proposed Projects. For the reasons explained above for YRDP Impact UTIL-PP-4, YRDP operational impacts on wastewater treatment under Alternative 1 would be **less than significant**.

YRDP Impact UTIL-Alt1-5: Construction Impacts on Solid Waste

YRDP construction activities under Alternative 1 would be the same as those under the Proposed Projects and would therefore have the same associated solid waste impacts. For the reasons explained above for YRDP Impact UTIL-PP-5, YRDP construction activities under Alternative 1 would have impacts on solid waste that are **less than significant**.

YRDP Impact UTIL-Alt1-6: Operations Impacts on Solid Waste

YRDP operational impacts under Alternative 1 would be similar to those described under YRDP Impact UTIL-PP-6 because Alternative 1 would include the same non-flow YRDP O&M activities as the Proposed Projects and because differences in flow-based operations do not affect solid waste. Accordingly, and for the reasons explained above for YRDP Impact UTIL-PP-6, YRDP operations under Alternative 1 would have impacts on solid waste that are **less than significant**.

Narrows Impact UTIL-Alt1-1: Operations Impacts on Utilities and Service Systems

Under Alternative 1, Yuba Water does not propose any changes to existing Narrows Project works or facilities, nor construction of new facilities. None of Yuba Water's proposed conditions under Alternative 1 would materially alter existing Narrows Project operations. Therefore, Narrows Project operations under Alternative 1 would have **no impact** on utilities and service systems.

Narrows Impact UTIL-Alt1-2: Operations Impacts on Solid Waste

Under Alternative 1, Yuba Water does not propose any changes to existing Narrows Project works or facilities, nor construction of new facilities. None of Yuba Water's proposed conditions under Alternative 1 would materially alter existing Narrows Project operations. Therefore, Narrows Project operations under Alternative 1 would have **no impact** on solid waste.

24.5.3 Alternative 2 compared to the Existing Condition

YRDP Impact UTIL-Alt2-1: Relocation or Construction of New or Expanded Infrastructure During Construction

Alternative 2 would involve the same improvements to YRDP facilities as the Proposed Projects and would therefore have the same associated impacts described under YRDP Impact UTIL-PP-1. For the reasons explained above for YRDP Impact UTIL-PP-1, with implementation of Mitigation Measure MM-UTIL-1, Alternative 2 YRDP construction impacts are considered **less than significant with mitigation incorporated**.

YRDP Impact UTIL-Alt2-2: Construction Impacts on Water Supplies

YRDP construction activities under Alternative 2 would be the same as those under the Proposed Projects and therefore would have the same associated impacts described under YRDP Impact UTIL-PP-2. For the reasons explained above for YRDP Impact UTIL-PP-2, YRDP construction impacts related to water supplies under Alternative 2 would be **less than significant**.

YRDP Impact UTIL-Alt2-3: Operations Impacts on Water Supplies

YRDP operational impacts under Alternative 2 would be similar to those described under YRDP Impact UTIL-PP-3 because Alternative 2 would include the same non-flow YRDP O&M activities as the Proposed Projects. No additional water supply would be needed for the O&M of YRDP hydropower facilities under Alternative 2 beyond that currently provided by New Bullards Bar Reservoir. Accordingly, and for the reasons explained above for YRDP Impact UTIL-PP-3, impacts of YRDP operations related to water supplies under Alternative 2 would be **less than significant**.

YRDP Impact UTIL-Alt2-4: Operations Impacts on Wastewater Treatment

YRDP operational impacts under Alternative 2 would be the same as those described under YRDP Impact UTIL-PP-4 because Alternative 2 would include the same non-flow YRDP O&M activities as the Proposed Projects. For the reasons explained above for YRDP Impact UTIL-PP-4, YRDP operational impacts on wastewater treatment under Alternative 2 would be **less than significant**.

YRDP Impact UTIL-Alt2-5: Construction Impacts on Solid Waste

YRDP construction impacts under Alternative 2 would be the same as those under the Proposed Projects and would therefore have the same associated solid waste impacts. For the reasons explained above for YRDP Impact UTIL-PP-5, YRDP construction activities under Alternative 2 would have impacts on solid waste that are **less than significant**.

YRDP Impact UTIL-Alt2-6: Operations Impacts on Solid Waste

YRDP operational impacts under Alternative 2 would be similar to those described under YRDP Impact UTIL-PP-6 because Alternative 2 would include the same non-flow YRDP O&M activities as the Proposed Projects and because differences in flow-based operations do not affect solid waste. Accordingly, and for the reasons explained above for YRDP Impact UTIL-PP-6, YRDP operations under Alternative 2 would have impacts on solid waste that are **less than significant**.

Narrows Impact UTIL-Alt2-1: Operations Impacts on Utilities and Service Systems

Under Alternative 2, Yuba Water does not propose any changes to existing Narrows Project works or facilities, nor construction of new facilities. Therefore, Narrows Project operations under Alternative 2 would have **no impact** on utilities and service systems.

Narrows Impact UTIL-Alt2-2: Operations Impacts on Solid Waste

Under Alternative 2, Yuba Water does not propose any changes to existing Narrows Project works or facilities, nor construction of new facilities. Therefore, Narrows Project operations under Alternative 2 would have **no impact** on solid waste.

24.5.4 No Project Alternative compared to the Existing Condition

YRDP Impact UTIL-NP-1: Relocation or Construction of New or Expanded Infrastructure During Construction

No construction work would occur under the No Project Alternative. As such, there would be no relocation or construction of new or expanded infrastructure. N**o impact** would occur.

YRDP Impact UTIL-NP-2: Construction Impacts on Water Supplies

No construction work would occur under the No Project Alternative. As such, there would be no demand for utilities and services, including water supplies, that would be generated by construction activities. N**o impact** would occur.

YRDP Impact UTIL-NP-3: Operations Impacts on Water Supplies

Aside from ceasing existing hydropower generation, YRDP operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Therefore, demand for utilities and services, including water supplies, would not change from the Existing Condition. **No impact** would occur.

YRDP Impact UTIL-NP-4: Operations Impacts on Wastewater Treatment

Aside from ceasing existing hydropower generation, YRDP operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Therefore, demand for utilities and services, including wastewater treatment, would not change from the Existing Condition. **No impact** would occur.

YRDP Impact UTIL-NP-5: Construction Impacts on Solid Waste and Compliance with Solid Waste Regulations

No construction work would occur under the No Project Alternative. As such, there would be no demand for utilities and services, including solid waste, that would be generated by construction activities. N**o impact** would occur.

YRDP Impact UTIL-NP-6: Operations Impacts on Solid Waste and Compliance with Solid Waste Regulations

Aside from ceasing existing hydropower generation, YRDP operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Therefore, demand for utilities and services, including solid waste, would not change from the Existing Condition. **No impact** would occur.

Narrows Impact UTIL-NP-1: Operations Impacts on Public Services

Aside from ceasing existing hydropower generation, Narrows Project operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Therefore, demand for utilities and services, including solid waste, would not change from the Existing Condition. **No impact** would occur.

Narrows Impact UTIL-NP-2: Operations Impacts on Solid Waste

Aside from ceasing existing hydropower generation, Narrows Project operations under the No Project Alternative would not significantly change when compared to the Existing Condition. Therefore, demand for utilities and services, including solid waste, would not change from the Existing Condition. **No impact** would occur.

24.6 Cumulative Impact Assessment

The purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Projects (i.e., the YRDP and Narrows Project FERC relicensing) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code Section 21083, subdivision (b)(2)). The projects that have been adequately defined (e.g., in recent project-level environmental documents) and that have the potential to contribute to cumulative impacts are included in the assessment of the Proposed Projects' and alternatives cumulative impacts. For analytical purposes of this DEIR, the projects that are considered well defined and "reasonably foreseeable" are described in Chapter 4.

24.6.1 Cumulative Condition with Proposed Projects compared to the Existing Condition

The geographical scope of cumulative impact analysis for utilities and service systems is typically the service areas of the utilities affected by a project. Only those projects that could affect utilities described in this chapter are included in the qualitative evaluation that is presented in subsequent sections of this chapter. Chapter 7, Power Production and Energy Consumption, discusses potential cumulative impacts on electricity supplies and energy consumption.

Water and wastewater services are limited to the Project Area, so the geographical scope for the cumulative impact analysis is limited to the Project Area and the projects determined to have potential cumulative impacts, as described below. Solid waste is collected by waste management companies granted a franchise by the county in which they operate. However, the main concern with solid waste is disposal at landfills. As described in this chapter, the Ostrom Road Landfill, which serves Yuba County, would receive solid waste generated by the Proposed Projects. Therefore, the geographical scope for solid waste impacts is Yuba County.

Although most of the projects described in Chapter 4 could have project-specific impacts that will be addressed in future project-specific environmental documentation, future implementation of these projects is not expected to result in increased demand for utilities in the geographical scope and therefore would not contribute cumulative impacts to utilities. These include forest thinning, flood control, fisheries improvement, and ecosystem restoration projects.

Only a limited number of projects are considered to have the potential to cumulatively impact utilities and service systems and are specifically considered qualitatively in the cumulative impacts analysis. These include the following:

FERC Hydropower Projects in the Yuba River Watershed

- *Yuba-Bear Hydroelectric Project*
- *Upper Drum-Spaulding Hydroelectric Project*
- *Lower Drum Hydroelectric Project*

Water Storage and Conveyance Projects

- *ARC Spillway Project*
- *Wheatland Water District In-Lieu Recharge Project*
- *Various Water Supply Improvement Projects*

Water Transfer and Acquisition Programs

- *Lower Yuba River Accord Water Transfer Program Extension*

Other Local Projects in the Yuba Region

- *Camptonville Biomass Plant*
- *Pumpline Solar Project*

These projects are described in Chapter 4, and their impacts related to utilities and service systems are addressed below.

The ARC Spillway and the Camptonville Biomass Plant, along with the listed FERC hydropower projects, would potentially affect utilities and service systems. The impact of the first two projects would be to potentially place additional demands on the electrical system by requiring electricity (see Chapter 7, Power Production and Energy Consumption). However, the Camptonville Biomass Plant would also produce electricity. Neither of these projects are located in an area with a community water system or sewer system. The "various water supply improvements" mentioned in Table 4.9-1 include improvements to the water supply system of the Camptonville Community Services District, which does not serve the Project Area.

Like the Proposed Projects, the other FERC hydropower projects would involve relicensing of hydropower facilities. NID is applying for relicensing of the Yuba-Bear Project, while PG&E is applying for relicensing of the Drum-Spaulding projects. The Yuba-Bear relicensing would involve some changes in operations that would affect minimum streamflows, spills from project canals and conduits, and the rate of flow fluctuations following spill events. It also would involve the construction of new facilities such as a new powerhouse and new or rehabilitated recreation facilities. The Drum-Spaulding relicensing would involve the same changes in operations as the Yuba-Bear relicensing, with additional changes specific to Spaulding Dam, Lake Valley Dam, and Drum Canal. This relicensing would also involve new or rehabilitated recreation facilities, as well as the retirement of one powerhouse and the removal of a diversion and associated conveyance system (FEIS 2014). None of these projects are located in an area with a community water system or sewer system. The FERC hydroelectric projects are likely to generate a demand for utilities similar to that of the Proposed Projects, particularly since new recreation facilities are proposed. Water supplies would be available from the YB/DS reservoirs to supply the proposed recreation facilities. None of the other projects would generate water demands that would require new water supplies. None of the projects propose construction of, or connection with, a wastewater treatment system. The proposed YB/DS recreation facilities would likely generate additional; however, this additional solid waste is seasonal.

The YB/BS facilities are mostly primitive to minimally developed; therefore, they are unlikely to use electricity in substantial quantities. Water use would be minimal, and vault restrooms would be provided, so these facilities would not require water or wastewater facilities or new water supplies. Solid waste would be collected as currently arranged, and the waste collected is not expected to substantially affect landfill capacities.

The water storage and conveyance projects, except for the ARC Spillway project, are located in the Lower Yuba River area, along with the Yuba Accord program. All of these projects involve activities that would likely require electricity, thus placing demands on the electrical system. The Yuba Accord program and the Wheatland Water District project would involve groundwater pumping. The other various water projects would involve upgrades to the SCADA system, which

require power, as well as improve water supply systems for various local entities that are identified in Table 4.9-1. None of these projects are served by a community water system or sewer system. The Pumpline project would have a positive cumulative effect, as the project would replace electricity obtained from the electrical grid with solar energy. The other projects would use electricity for groundwater pumping and electrical equipment. Groundwater pumping under these projects would occur only when necessary, and electrical equipment would not consume substantial amounts of electricity. No new electrical lines would be required, nor would any water or wastewater lines or facilities.

As explained above, the Proposed YRDP Project would not result in any unmitigated public utility impacts. The Proposed Narrows Project would not result in any public utility impacts that could contribute to a cumulative impact. While the projects listed may require the relocation of existing utility lines or the installation of new lines, these activities would generally be confined to the construction site and would not cumulate with the impacts of the Proposed YRDP Project. Utility line improvements to these water facilities would be subject to applicable regulations and would be subject to CEQA review, if not already, with mitigation measures to be implemented if necessary.

For these reasons, the Proposed Projects, in combination with other past, present, and future projects, would not be expected to result in significant environmental impacts from relocation or construction of utilities, lack of sufficient water supplies, inadequate wastewater treatment capacity, or generation and disposal of solid waste. Accordingly, under the Cumulative Condition, including the Proposed Projects, the cumulative impact relating to utilities and service systems would be less than significant.

YRDP Cumulative Impact UTIL-PP-1: Potential for significant cumulative utilities impacts resulting from the YRDP

As noted above, under the Cumulative Condition, including the Proposed Projects, the cumulative utility impact would be less than significant. Accordingly, the Proposed YRDP Project would result in a **less than significant cumulative impact** related to utilities and service systems.

Narrows Cumulative Impact UTIL-PP-1: Potential for significant cumulative utilities impacts resulting from the Narrows Project

As discussed under Narrows Impacts UTIL-PP-1 and UTIL-PP-2, the Proposed Narrows Project would have no impact on utilities and service systems that could contribute to a potential cumulative impact. In any event, under the Cumulative Condition, including the Proposed Projects, the cumulative utility impact would be less than significant. Accordingly, the Proposed Narrows Project would result in **no cumulative impact** related to utilities and service systems.

24.6.2 Cumulative Condition with Alternative 1 compared to the Existing Condition

Projects that, along with Alternative 1, may contribute to a cumulative impact on public services are listed in Section 24.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 1 would

be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 24.6.2 above. Alternative 1 would include all the same construction and non-flow O&M activities as the Proposed Projects. While Alternative 1 and the Proposed Projects include differences in flow-based operations, those differences do not materially affect utility and service system considerations in the analysis and conclusions in Section 24.6.2. For the same reasons explained in Section 24.6.2 above, the Cumulative Condition, including Alternative 1, would not result in a significant utility and service system impact relative to the Existing Condition.

YRDP Cumulative Impact UTIL-Alt1-1: Potential for significant cumulative utilities impacts resulting from the YRDP

As noted above, under the Cumulative Condition, including Alternative 1, the cumulative utility and service system impact would be less than significant. Accordingly, YRDP construction and operations under Alternative 1 would result in a **less than significant cumulative impact** related to utilities and service systems.

Narrows Cumulative Impact UTIL-Alt1-1: Potential for significant cumulative utilities impacts resulting from the Narrows Project

As discussed under Narrows Impacts UTIL-Alt1-1 and UTIL-Alt1-2, Narrows Project operations under Alternative 1 would have no impact on utilities and service systems that could contribute to a potential cumulative impact. In any event, under the Cumulative Condition, including Alternative 1, the cumulative utility impact would be less than significant. Accordingly, Narrows Project operations under Alternative 1 would result in **no cumulative impact** related to utilities and service systems.

24.6.3 Cumulative Condition with Alternative 2 compared to the Existing Condition

Projects that, along with Alternative 2, may contribute to a cumulative impact on public services are listed in Section 24.6.1 above. No additional projects are applicable. Relative to the Existing Condition, the cumulative impact under the Cumulative Condition including Alternative 2 would be similar to the cumulative impact under the Cumulative Condition including the Proposed Projects described in Section 24.6.2 above. Alternative 2 would include all the same construction and non-flow operations and maintenance activities as the Proposed Projects. While Alternative 2 and the Proposed Projects include differences in flow-based operations, those differences do not materially affect utility and service system considerations in the analysis and conclusions in Section 24.6.2. For the same reasons explained in Section 24.6.2 above, the Cumulative Condition, including Alternative 2, would not result in a significant utility and service system impact relative to the Existing Condition.

YRDP Cumulative Impact UTIL-Alt2-1: Potential for significant cumulative utilities impacts resulting from the YRDP.

As noted above, under the Cumulative Condition, including Alternative 2, the cumulative utility and service system impact would be less than significant. Accordingly, YRDP construction and

operations under Alternative 1 would result in a **less than significant cumulative impact** related to utilities and service systems.

Narrows Cumulative Impact UTIL-Alt2-1: Potential for significant cumulative utilities impacts resulting from the Narrows Project.

As discussed under Narrows Impacts UTIL-Alt2-1 and UTIL-Alt2-2, Narrows Project operations under Alternative 2 would have no impact on utilities and service systems that could contribute to a potential cumulative impact. In any event, under the Cumulative Condition, including Alternative 2, the cumulative utility impact would be less than significant. Accordingly, Narrows Project operations under Alternative 2 would result in **no cumulative impact** related to utilities and service systems.

24.7 Literature Cited

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Yuba Water. *See* Yuba County Water Agency.

CHAPTER 25

OTHER CEQA CONSIDERATIONS

25.1 Introduction

This chapter addresses other CEQA considerations that are required as part of an EIR. In addition to identifying the potential for physical effects of the Proposed Projects and measures to mitigate any identified significant effects, the CEQA Guidelines also require evaluation of the following topics:

- Growth-Inducing Impacts (CEQA Guidelines § 15126(e))
- Significant and Unavoidable Impacts (CEQA Guidelines § 15126.2(c))
- Significant Irreversible Environmental Changes (CEQA Guidelines § 15126.2(d))
- Comparison of Alternatives and Environmentally Superior Alternative (CEQA Guidelines § 15126.6)

In addition, this chapter contains a discussion of climate change and its potential influences on the Proposed Projects and alternatives.

25.2 Growth-Inducing Impacts

CEQA requires an EIR to discuss any growth-inducing impacts that would result from a Proposed Project (Public Resources Code § 21100(b)(5)). More specifically, CEQA Guidelines § 15126.2(e) states that an EIR shall discuss the ways in which a Proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to growth; for example, a major expansion of a wastewater treatment plant might allow for more construction in its service area. Section 15162.2(d) also states that an EIR shall discuss Project characteristics that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Yuba Water is seeking renewal of the FERC licenses for the YRDP and the Narrows Project to continue to provide a source of hydroelectric power and flood control and to serve as a water supply for both domestic and irrigation purposes. The benefits of the YRDP include water supply, flood control, recreation, fish and wildlife habitat, and power generation. Yuba Water operates the Narrows Project in coordination with the YRDP's Narrows 2 Powerhouse to meet YRDP requirements. Under the Proposed Projects, Yuba Water would operate the YRDP and the Narrows Project to continue to provide these benefits. The Proposed Projects would not create new water supplies or expand existing water supplies available to YRDP. As such, no additional water supplies would be available that could encourage economic or population growth, including expanded agricultural production through irrigation or increased urban development.

The Proposed YRDP Project also includes improvements to existing recreational facilities and construction of new recreational facilities at the YRDP. Chapter 11, Recreation, analyzes the potential environmental impacts of these activities. The analysis concluded that recreational facility capacity at YRDP recreation facilities, combined with the implementation of the measures as part of the YRDP Recreation Facilities Plan, would not increase the use of existing recreational facilities. Proposed YRDP operations have the potential to increase the number of boating days on the Middle Yuba River below Our House Diversion Dam. However, the number of additional days would be low, and demand on this reach would be reduced when other reaches are available in Wet and Above Normal water years. In any case, the new facilities and the improved existing facilities are not expected to lead to a substantial increase in economic growth, nor would they directly or indirectly increase the regional population. No new development in the region would be generated by these new or improved facilities.

As described in Chapter 2, Project Description, no new or improved facilities are proposed for the Narrows Project. Only minimal changes are proposed to Narrows Project operations. As with the YRDP, the proposed Narrows Project would not result in new or expanded water supplies, which means that no additional water supplies would be available that could encourage economic or population growth.

In summary, the Proposed Projects are not expected, either directly or indirectly, to foster economic or population growth or the construction of additional housing in the surrounding environment. It also would not involve any features that would remove obstacles to growth. Therefore, neither the Proposed YRDP Project nor the Proposed Narrows Project relicensing would have significant growth-inducing impacts.

25.3 Significant and Unavoidable Impacts

Under CEQA, an EIR shall discuss any significant effect on the environment that cannot be avoided if a project is implemented (Public Resources Code § 21100(b)(2)(A)). CEQA Guidelines § 15126.2(c) further specifies that significant and unavoidable effects include those that can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications, and reasons why the project is being proposed, notwithstanding their effect, should be described.

EIR Chapters 5 through 24 analyzed specific resource topic areas for potentially significant impacts resulting from the Proposed Projects. The Proposed Narrows Project would not result in any potentially significant impacts. For the Proposed YRDP Project, potentially significant impacts were identified for visual resources, cultural resources, air quality and GHG emissions, wildfire, utilities and service systems, biological resources, fisheries resources, noise and vibration, and transportation. As discussed in detail in the respective resource chapters, mitigation measures would reduce most of these impacts to a level that would be less than significant. However, the Proposed YRDP Project would potentially have the following significant and unavoidable air quality and GHG emissions and transportation impacts:

Air Quality and GHG Emissions

- Conflict with applicable air quality plan from operations (*YRDP Impact AQ-PP-2*)
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from operations (*YRDP Impact AQ-PP-4*)
- Generation of GHG emissions from construction activities (*YRDP Impact GHG-PP-1*)
- Generation of GHG emissions from operations (*YRDP Impact GHG-PP-2*)
- Conflict with a GHG reduction plan (*YRDP Impact GHG-PP-3*)
- Cumulative air quality impacts (*YRDP Cumulative Impact AQ-PP-1*)
- Cumulative GHG impacts (*YRDP Cumulative Impact GHG-PP-1*)

Transportation

- Construction impacts on consistency with CEQA Guidelines §15064.3 (*YRDP Impact TRANS-PP-3*)
- Operational impacts on consistency with CEQA Guidelines §15064.3 (*YRDP Impact TRANS-PP-4*)
- Cumulative transportation impacts (*YRDP Cumulative Impact TRANS-PP-1*)

As explained in Chapter 15, Air Quality and Greenhouse Gas Emissions, the Proposed YRDP Project could result in significant and unavoidable air quality impacts due to proposed recreational facility improvements in compliance with Forest Service standards and requirements, which would include new campfire rings. An increase in recreational campfires at YRDP recreational facilities could cause an increase in ROG emissions, leading to significant individual and cumulative impacts relating to conflicts with applicable air quality plans and increases in criteria pollutants for which the region is in non-attainment. Additionally, the Proposed YRDP Project would result in significant GHG emissions, both directly (primarily from construction activities) and indirectly (from decreased hydropower generation). As explained in Chapter 19, Transportation, the Proposed YRDP Project would result in significant transportation impacts due to the net increase in VMT during construction and from increased recreation activities.

GHG and transportation impacts from construction, while significant, would be intermittent and temporary. As shown in Section 25.5.1, the No Project Alternative would avoid these impacts because none of the proposed construction would occur. However, as explained in Section 25.5.2, the No Project Alternative would not meet the objectives of the Proposed YRDP Project. Moreover, as shown in Section 25.5.1 and explained in Section 25.5.2, the No Project Alternative would result in long-term significant and unavoidable impacts in other resource areas that would more than outweigh the Proposed YRDP Project's temporary construction impacts.

As explained in Chapter 2, Project Description, long-term use and maintenance of the new and improved YRDP recreational facilities would be governed by the *Recreation Facilities Plan*, which was developed in consultation with USFS. As implementation of the *Recreation Facilities*

Plan would be included as a mandatory condition of a new FERC license for the YRDP, only the No Project Alternative would avoid the potentially significant and unavoidable impacts associated with the use and maintenance of the YRDP recreational facilities. As noted above and explained more fully below, the No Project Alternative would not accomplish the project objectives and would result in significant and unavoidable impacts to other resources.

Although the Proposed YRDP Project would have significant and unavoidable operational indirect GHG impacts due to the reduction in hydropower generation, the YRDP would continue to provide a clean source of energy that offsets power plants using fossil fuels. Moreover, the reduction in hydropower generation would occur due to flow-based changes intended to provide environmental benefits in other resource areas (i.e., fisheries). To some extent, managing operations to minimize indirect GHG emissions involves tradeoffs with other resource areas potentially impacted by the YRDP.

Alternatives 1 and 2 would involve the same YRDP construction activities and non-flow operations as the Proposed YRDP Project and would therefore have the same associated significant and unavoidable impacts, while the No Project Alternative would avoid some of these impacts, as noted above. With respect to GHG emissions, the overall magnitude of the significant and unavoidable impacts under Alternative 1 and the Proposed YRDP Project would be similar. Comparatively, Alternative 2 would result in significantly more indirect GHG emissions due to a greater decrease in hydropower generation, and the No Project Alternative would have the most severe indirect GHG emissions impact due to the complete loss of hydropower generation.

Table 25.3-1 summarizes the significant and unavoidable impacts of the Proposed Projects and the alternatives, as described above. The impacts are sorted by DEIR chapter in which they are described.

Table 25.3-1. Significant and Unavoidable Impacts Identified in DEIR.

DEIR Chapter	Significant and Unavoidable Impacts
Chapter 5 – Surface Water Resources	• *YRDP Impact SW-FAlt2-3: Water Supply Shortages from Operations* (Alternative 2) • *YRDP Impact SW-FAlt2-4: Yuba Accord Transfers Resulting from YRDP Operations* (Alternative 2) • *YRDP Cumulative Impact SW-Alt2-1: Cumulative Impacts to Surface Water Resources* (Alternative 2)
Chapter 6 – Groundwater Resources	• *YRDP Impact GW-FAlt2-1: Operational Impacts on Groundwater Levels and Associated Sustainability Indicators* (Alternative 2) • *YRDP Cumulative Impact GW-Alt2-1: Cumulative Operational Impacts on Groundwater Levels and Associated Sustainability Indicators* (Alternative 2)
Chapter 7 – Energy	• *YRDP Impacts EN-FAlt2-1 and EN-NP-1: Change in Monthly Generation from Operations* (Alternative 2 and No Project) • *YRDP Impacts EN-FAlt2-3 and EN-NP-3: Reduction in Generation-Related Revenue from Operations* (Alternative 2 and No Project)

DEIR Chapter	Significant and Unavoidable Impacts
	• *YRDP Impact EN-NP-2: Change in Monthly Generation Capacity from Operations* (No Project) • *YRDP Impact EN-NP-7: Operational Conflicts with Renewable Energy or Energy Efficiency Plans* (No Project) • *YRDP Cumulative Impact EN-Alt2-1 and EN-NP-1: Cumulative Impacts to Power Production and Energy Consumption* (Alternative 2 and No Project) • *Narrows Impacts EN-FAlt2-1 and EN-NP-1: Change in Monthly Generation from Narrows 1 Operations* (Alternative 2 and No Project) • *Narrows Impact EN-NP-2: Change in Monthly Generation Capacity from Narrows 1 Operations* (No Project) • *Narrows Impact EN-NP-3: Reduction in Generation-Related Revenue from Narrows 1 Operations* (No Project) • *Narrows Impact EN-NP-5: Operational Conflicts with Renewable Energy or Energy Efficiency Plans* (No Project) • *Narrows Cumulative Impacts EN-Alt2-1, EN-NP-1: Cumulative Impacts to Power Production and Energy Consumption* (Alternative 2 and No Project)
Chapter 8 – Surface Water Quality	• *YRDP Impact WQ-FAlt2-5: Impacts on New Bullards Bar Reservoir Water Quality from Operation of Alternative 2* (Alternative 2) • *YRDP Cumulative Impacts WQ-Alt2-1: Cumulative Impacts on Surface Water Quality from Construction, Operation, and Maintenance* (Alternative 2)
Chapter 9 – Fisheries Resources	• *YRDP Impact FISH-FAlt2-6: Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam.* (Alternative 2) • *YRDP Impact FISH-FAlt2-7: Operations-related impacts on spring-run Chinook salmon in the lower Yuba River. (Alternative 2)* • *YRDP Impact FISH-FAlt2-10: Operations-related impacts on green sturgeon in the lower Yuba River.* (Alternative 2) • *YRDP Impact FISH-FAlt2-11: Operations-related impacts on lamprey in the lower Yuba River.* (Alternative 2) • *YRDP Impact FISH-FAlt2-14: Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir.* (Alternative 2) • *YRDP Impact FISH-FAlt2-15: Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir.* (Alternative 2)

DEIR Chapter	Significant and Unavoidable Impacts
	• *YRDP Impact FISH-FAlt2-16: Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries.* (Alternative 2) • *YRDP Cumulative Impact FISH-Alt2-1: Cumulative impacts to fisheries resources in the Project Area.* (Alternative 2)
Chapter 11 – Recreation	• *YRDP Impact REC-FAlt2-1: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities such that Substantial Physical Deterioration of the Facility Would Occur or Be Accelerated* (Alternative 2) • *YRDP Cumulative Impact REC-Alt2-1: Potential for significant cumulative recreation impacts* (Alternative 2)
Chapter 15 – Air Quality and Greenhouse Gas Emissions	• *YRDP Impacts AQ-PP-2, AQ-Alt1-2, and AQ-Alt2-2: Conflicts with Applicable Air Quality Plan from Operations* (Proposed Projects, Alternative 1, Alternative 2) • *YRDP Impacts AQ-PP-4, AQ-Alt1-4, and AQ-Alt2-4: Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations* (Proposed Projects, Alternative 1, Alternative 2) • *YRDP Impacts GHG-PP-1, GHG-Alt1-1, and GHG-Alt2-1: Generation of GHG Emissions from Construction Activities* (Proposed Projects, Alternative 1, Alternative 2) • *YRDP Impacts GHG-PP-2, GHG-Alt1-2, GHG-Alt2-2, GHG-NP-2: Generation of GHG Emissions from Operations* (Proposed Projects, Alternative 1, Alternative 2, No Project) • *YRDP Impacts GHG-PP-3, GHG-Alt1-3, GHG-Alt2-3, GHG-NP-3: Conflict with a GHG Reduction Plan* (Proposed Projects, Alternative 1, Alternative 2, No Project) • *Narrows Impact GHG-NP-1: Generation of GHG Emissions from Operations* (No Project) • *Narrows Impact GHG-NP-2: Conflict with a GHG Reduction Plan* (No Project) • *Indirect Impact GHG-Alt1-1: Indirect impacts from YB/DS operations* (Alternative 1) • *YRDP Cumulative Impacts AQ-PP-1, AQ-Alt1-1, and AQ-Alt2-1: Cumulative Air Quality Impacts.* (Proposed Projects, Alternative 1, Alternative 2).

DEIR Chapter	Significant and Unavoidable Impacts
	• *YRDP Cumulative Impacts GHG-PP-1, GHG-Alt1-1, GHG-Alt2-1, GHG-NP-1: Cumulative GHG Impacts* (Proposed Projects, Alternative 1, Alternative 2, No Project) • *Narrows Cumulative Impact GHG-NP-1: Potential for significant cumulative GHG impact resulting from the Narrows Project* (No Project)
Chapter 19 – Transportation	• *YRDP Impacts TRANS-PP-3, TRANS-Alt1-3, and TRANS-Alt2-3: Construction Impacts on Consistency with CEQA Guidelines §15064.3* (Proposed Projects, Alternative 1, Alternative 2) • *YRDP Impacts TRANS-PP-4, TRANS-Alt1-4, and TRANS-Alt2-4: Operational Impacts on Consistency with CEQA Guidelines §15064.3 (Upstream of Englebright Dam)* (Proposed Projects, Alternative 1, Alternative 2) • *YRDP Cumulative Impacts TRANS-PP-1, TRANS-Alt1-1, and TRANS-Alt2-1: Potential for significant cumulative transportation impacts resulting from the YRDP* (Proposed Projects, Alternative 1, Alternative 2)

25.4 Significant Irreversible Environmental Changes and Irretrievable Commitments of Resources

Under CEQA, an EIR shall discuss any significant effect on the environment that would be irreversible if a project is implemented (Public Resources Code § 21100(b)(2)(B)). CEQA Guidelines § 15126.2(d) provides more detail on what constitutes an irreversible environmental change. Uses of non-renewable resources during the initial and continued phases of a project may be irreversible, since a large commitment of such resources makes removal or non-use thereafter unlikely. Primary impacts, and particularly secondary impacts, generally commit future generations to similar uses. An example of a secondary impact is a highway improvement that provides access to a previously inaccessible area. Also, irreversible damage can result from environmental accidents associated with a project. Irretrievable commitments of resources should be evaluated to ensure that such current consumption is justified.

No construction work is proposed at the Narrows Project, so that Project would not involve any irretrievable commitment of resources associated with construction. As discussed in Chapter 7, Energy, proposed YRDP construction activities would involve the use of gas- and diesel-fueled vehicles and equipment and the import/export of materials to and from the construction site. These activities also would increase fuel and other energy resource consumption, which would be non-recoverable. However, this increase would be temporary and would cease once construction work is completed. It is anticipated that fuel would only be used to the extent it is needed to complete construction activities. Additionally, the selected construction contractor(s) would use the best available engineering techniques, construction practices, and equipment operating procedures, which are expected to promote efficiency in fuel consumption.

Proposed YRDP construction would also involve the commitment of construction materials such as concrete, metal, and plastics. Construction of, and improvements to, recreation facilities would also involve these materials, as well as wood. These materials, once used, would mostly be unavailable for future use. It is possible that the concrete and metal used in YRDP construction activities could be recycled if future improvements are made to the YDRP facilities, or if these facilities are demolished. However, it is expected that such recycling opportunities would be limited. Opportunities for the reuse or recycling of wood are likewise limited; however, wood is a renewable resource. Plastics are not renewable resources, and they cannot be readily recycled.

The proposed relicensing of the YRDP would involve the construction of new recreational facilities on lands that are currently undeveloped. Once these facilities are constructed, these lands would be committed to recreational uses, especially as internal road construction would be involved. However, as noted in Chapter 22, Land Use, these lands are currently zoned for recreational uses by Yuba County.

As discussed in Chapter 7, operations of the YRDP and the Narrows Project under the new FERC licenses are not expected to substantially increase energy consumption above current levels, since most of the facilities already exist. Consumption would be limited to electricity and fossil fuels consumed during O&M activities. No additional materials would be required for operations. Therefore, the Proposed Projects' operations would involve only limited irreversible environmental changes or irretrievable commitment of resources.

25.5 Comparison of Alternatives and Environmentally Superior Alternative

25.5.1 Comparison of Alternatives

Chapter 3, Alternatives, describes the alternatives to the Proposed Projects that were evaluated in this DEIR – Alternative 1 and Alternative 2 – along with the No Project Alternative. The potential environmental impacts associated with the selected alternatives were analyzed in the technical chapters of the DEIR (Chapters 5-24).

CEQA Guidelines Section 15126.6(d) states that an EIR should include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with a proposed project. A matrix displaying the significant environmental effects of each alternative may be used to summarize the comparison. In accordance with the recommendation of CEQA Guidelines Section 15126.6(d), Tables 25.5-1 and 25.5-2 summarize the most significant level of environmental impacts of the three alternatives evaluated in this DEIR and compares them with the YRDP and Narrows Projects, respectively.

Table 25.5-1. Comparison of Alternatives to the Proposed YRDP.

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Chapter 5 - Surface Water Resources							
Rate or Amount of Surface Runoff from Operations *(YRDP Impacts SW-PP-1, SW-FPP-1, SW-FAlt1-1, SW-FAlt2-1, SW-NP-1)*	LTS	LTS		LTS		LTS	LTS
Impede or Redirect Flood Flows *(YRDP Impacts SW-PP-2, SW-FPP-2, SW-FAlt1-2, SW-FAlt2-2, SW-NP-2)*	LTS/PB	LTS/PB		LTS/PB		LTS/PB	LTS
Water Supply Shortages from Operations *(YRDP Impact SW-PP-3, SW-FPP-3, SW-FAlt1-3, SW-FAlt2-3, SW-NP-3)*	LTS	LTS		LTS		PSU	LTS
Yuba Accord Transfers Resulting from Operations *(YRDP Impact SW-PP-4, SW-FPP-4, SW-FAlt1-4, SW-FAlt2-4, SW-NP-4)*	LTS	LTS		LTS		SU	LTS
Potential Water Supply Shortages for NID and PG&E Customers from Alternative 1 YB/DS operations *(Indirect Impact SW-FAlt1-1)*				LTS			
Cumulative Impacts to Surface Water Resources *(YRDP Cumulative Impacts SW-PP-1, SW-Alt1-1, and SW-Alt2-1)*	LTS		LTS		SU		
Chapter 6 – Groundwater Resources							
Operational Impacts on Groundwater Levels and Associated Sustainability Indicators *(YRDP Impact GW-PP-1, GW-FPP-1, GW-FAlt1-1, GW-FAlt2-1, GW-NP-1)*	LTS	LTS		LTS		SU	NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Indirect Impacts on Groundwater Resources from Alternative 1 YB/DS Operations Upstream of the YRDP *(Indirect Impact GW-FAlt1-1))*				LTS			
Cumulative Operational Impacts on Groundwater Levels and Associated Sustainability Indicators *(YRDP Cumulative Impact GW-PP-1, GW-Alt1-1, GW-Alt2-1)*	LTS		LTS		SU		
Chapter 7 - Energy							
Change in Monthly Generation from Operations *(YRDP Impact EN-PP-1, EN-FPP-1, EN-FAlt1-1, EN-FAlt2-1, EN-NP-1)*	LTS	LTS		LTS		PSU	PSU
Change in Monthly Generation Capacity from Operations *(YRDP Impact EN-PP-2, EN-FPP-2, EN-FAlt1-2, EN-FAlt2-2, EN-NP-2)*	LTS	LTS		LTS		LTS	PSU
Reduction in Generation-Related Revenue from Operations *(YRDP Impact EN-PP-3, EN-FPP-3, EN-FAlt1-3, EN-FAlt2-3, EN-NP-3)*	LTS	LTS		LTS		PSU	PSU
Energy Consumption by Construction Activities *(YRDP Impact EN-PP-4, EN-Alt1-4, EN-Alt2-4, EN-NP-4)*	LTS		LTS		LTS		NI
Energy Consumption by Operations *(YRDP Impact EN-PP-5, EN-Alt1-5, EN-Alt2-5, EN-NP-5)*	LTS		LTS		LTS		NI
Construction Conflicts with Renewable Energy or Energy Efficiency Plans *(YRDP Impact EN-PP-6, EN-Alt1-6, EN-Alt2-6, EN-NP-6)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operational Conflicts with Renewable Energy or Energy Efficiency Plans *(YRDP Impact EN-PP-7, EN-Alt1-7, EN-Alt2-7, EN-NP-7)*	LTS		LTS		LTS		PSU
Potential Reduction in Energy Generation from NID and PG&E Project *(Indirect Impact EN-FAlt1-1)*				LTS			
Cumulative impacts to power production and energy consumption resources *(YRDP Cumulative Impact EN-PP-1, EN-Alt1-1, EN-Alt2-1, EN-NP-1)*	LTS		LTS		SU		SU
Chapter 8 - Surface Water Quality							
Modification of Power Generation- and Water Conveyance-Related Facilities *(YRDP Impact WQ-PP-1, WQ-Alt1-1, WQ-Alt2-1, WQ-NP-1)*	LTS		LTS		LTS		LTS
Implementation of the YRDP Recreation Facilities Plan *(YRDP Impact WQ-PP-2, WQ-Alt1-2, WQ-Alt2-2, WQ-NP-2)*	LTS		LTS		LTS		LTS
Implementation of the YRDP Log Cabin and Our House Diversion Dams Sediment Management Plan *(YRDP Impact WQ-PP-3, WQ-Alt1-3, WQ-Alt2-3, WQ-NP-3)*	LTS		LTS		LTS		LTS
Implementation of Other YRDP Implementation Plans *(YRDP Impact WQ-PP-4, WQ-Alt1-4, WQ-Alt2-4, WQ-NP-4)*	LTS		LTS		LTS		LTS
New Bullards Bar Reservoir Water Quality Impacts from Operation *(YRDP Impact WQ-PP-5, WQ-FPP-5, WQ-FAlt1-5, WQ-FAlt2-5, WQ-NP-5)*	LTS	LTS		LTS		PSU	LTS

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Englebright Reservoir Water Quality Impacts from Operation *(YRDP Impact WQ-PP-6, WQ-FPP-6, WQ-FAlt1-6, WQ-FAlt2-6, WQ-NP-6)*	LTS	LTS		LTS		LTS	LTS
North Yuba River below New Bullards Bar Dam Water Quality Impacts from Operation *(YRDP Impact WQ-PP-7, WQ-FPP-7, WQ-FAlt1-7, WQ-FAlt2-7, WQ-NP-7)*	LTS	LTS		LTS		LTS	LTS
Oregon Creek Water Quality Impacts from Operation *(YRDP Impact WQ-PP-8, WQ-FPP-8, WQ-FAlt1-8, WQ-FAlt2-8, WQ-NP-8)*	LTS	LTS		LTS		LTS	LTS
Middle Yuba River Water Quality Impacts from Operation *(YRDP Impact WQ-PP-9, WQ-FPP-9, WQ-FAlt1-9, WQ-FAlt2-9, WQ-NP-9)*	LTS	LTS		LTS		LTS	LTS
Upper Yuba River Water Quality Impacts from Operation *(YRDP Impact WQ-PP-10, WQ-FPP-10, WQ-FAlt1-10, WQ-FAlt2-10, WQ-NP-10)*	LTS	LTS		LTS		LTS	LTS
Lower Yuba River Water Quality Impacts from Operation *(YRDP Impact WQ-PP-11, WQ-FPP-11, WQ-FAlt1-11, WQ-FAlt2-11, WQ-NP-11)*	LTS	LTS		LTS		LTS	LTS
Impacts on the Lower Feather River, Sacramento River, and Delta from Operation *(YRDP Impact WQ-PP-12, WQ-FPP-12, WQ-FAlt1-12, WQ-FAlt2-12, WQ-NP-12)*	LTS	LTS		LTS		LTS	LTS
Impacts on Surface Water Quality from Other Operations and Maintenance *(YRDP Impact WQ-PP-13, WQ-Alt1-13, WQ-Alt2-13, WQ-NP-13)*	LTS		LTS		LTS		LTS

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Risk of Release of Pollutants due to Project Inundation in Flood Hazard Zones *(YRDP Impact WQ-PP-14, WQ-FPP-14, WQ-FAlt1-14, WQ-FAlt2-14, WQ-NP-14)*	LTS	LTS		LTS		LTS	LTS
Consistency with Water Quality Control Plans *(YRDP Impact WQ-PP-15, WQ-Alt1-15, WQ-Alt2-15, WQ-NP-15)*	NI		NI		NI		LTS
Indirect Impacts on Water Quality of Reservoirs and Rivers Upstream of the YRDP from Alternative 1 YB/DS Operations *(Indirect Impact WQ-FAlt1-1)*				LTS			
Cumulative Impacts on Surface Water Quality from Construction, Operation, and Maintenance *(YRDP Cumulative Impact WQ-PP-1, WQ-Alt1-1, WQ-Alt2-1)*	LTS		LTS		SU		
Chapter 9 – Fisheries Resources							
Construction-related impacts in areas upstream of Englebright Dam. *(YRDP Impact FISH-PP-1, FISH-Alt1-1, FISH-Alt2-1, FISH-NP-1)*	LTS		LTS		LTS	LTS	LTS
Construction-related impacts in the lower Yuba River. *(YRDP Impact FISH-PP-2, FISH-Alt1-2, FISH-Alt2-2, FISH-NP-2)*	LTS		LTS		LTS	LTS	LTS
Operations-related impacts on rainbow trout in the YRDP reaches upstream of Englebright Dam. *(YRDP Impact FISH-PP-3, FISH-FPP-3, FISH-FAlt1-3, FISH-FAlt2-3, FISH-NP-3)*	LTS/PB	LTS/PB		LTS/PB		LTS/PB	LTS

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations-related impacts on hardhead in the YRDP reaches upstream of Englebright Dam. *(YRDP Impact FISH-PP-4, FISH-FPP-4, FISH-FAlt1-4, FISH-FAlt2-4, FISH-NP-4)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on Sacramento pikeminnow in the YRDP reaches upstream of Englebright Dam. *(YRDP Impact FISH-PP-5, FISH-FPP-5, FISH-FAlt1-5, FISH-FAlt2-5, FISH-NP-5)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on Sacramento sucker in the YRDP reaches upstream of Englebright Dam. *(YRDP Impact FISH-PP-6, FISH-FPP-6, FISH-FAlt1-6, FISH-FAlt2-6, FISH-NP-6)*	LTS	LTS		LTS		SU	LTS
Operations-related impacts on spring-run Chinook salmon in the lower Yuba River. *(YRDP Impact FISH-PP-7, FISH-FPP-7, FISH-FAlt1-7, FISH-FAlt2-7, FISH-NP-7)*	LTS	LTS		B		SU	LTS
Operations-related impacts on fall-run Chinook salmon in the lower Yuba River. *(YRDP Impact FISH-PP-8, FISH-FPP-8, FISH-FAlt1-8, FISH-FAlt2-8, FISH-NP-8)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on steelhead in the lower Yuba River. *(YRDP Impact FISH-PP-9, FISH-FPP-9, FISH-FAlt1-9, FISH-FAlt2-9, FISH-NP-9)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on green sturgeon in the lower Yuba River. *(YRDP Impact FISH-PP-10, FISH-FPP-10, FISH-FAlt1-10, FISH-FAlt2-10, FISH-NP-10)*	LTS	LTS		LTS		SU	LTS

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations-related impacts on lamprey in the lower Yuba River. *(YRDP Impact FISH-PP-11, FISH-FPP-11, FISH-FAlt1-11, FISH-FAlt2-11, FISH-NP-11)*	LTS	LTS		LTS		SU	LTS
Operations-related impacts on white sturgeon in the lower Yuba River. *(YRDP Impact FISH-PP-12, FISH-FPP-12, FISH-FAlt1-12, FISH-FAlt2-12, FISH-NP-12)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on other fish species in the lower Yuba River. *(YRDP Impact FISH-PP-13, FISH-FPP-13, FISH-FAlt1-13, FISH-FAlt2-13, FISH-NP-13)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on warmwater fisheries in New Bullards Bar Reservoir. *(YRDP Impact FISH-PP-14, FISH-FPP-14, FISH-FAlt1-14, FISH-FAlt2-14, FISH-NP-14)*	LTS	LTS		LTS		SU	LTS
Operations-related impacts on coldwater fisheries in New Bullards Bar Reservoir. *(YRDP Impact FISH-PP-15, FISH-FPP-15, FISH-FAlt1-15, FISH-FAlt2-15, FISH-NP-15)*	LTS	LTS		LTS		SU	LTS
Operations-related impacts on fish access to New Bullards Bar Reservoir tributaries. *(YRDP Impact FISH-PP-16, FISH-FPP-16, FISH-FAlt1-16, FISH-FAlt2-16, FISH-NP-16)*	LTS	LTS		LTS		SU	LTS

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Other operations-related impacts on YRDP reservoir fisheries in areas upstream of Englebright Dam. *(YRDP Impact FISH-PP-17, FISH-FPP-17, FISH-Alt1-17, FISH-FAlt1-17, FISH-Alt2-17, FISH-FAlt2-17, FISH-NP-17)*	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Other operations-related impacts on fisheries resources in reaches upstream of Englebright Dam. *(YRDP Impact FISH-PP-18, FISH-FPP-18, FISH-Alt1-18, FISH-FAlt1-18, FISH-Alt2-18, FISH-FAlt2-18, FISH-NP-18)*	LTS	LTS	LTS	LTS	LTS/PB	LTS/PB	LTS
Other operations-related impacts on fisheries resources in the lower Yuba River. *(YRDP Impact FISH-PP-19, FISH-FPP-19, FISH-Alt1-19, FISH-FAlt1-19, FISH-Alt2-19, FISH-FAlt2-19, FISH-NP-19)*	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Operations-related impacts on special-status fish species in areas downstream of the lower Yuba River. *(YRDP Impact FISH-PP-20, FISH-FPP-20, FISH-FAlt1-20, FISH-Alt2-20, FISH-FAlt2-20, FISH-NP-20)*	LTS	LTS		LTS	LTS	LTS	LTS
YRDP consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans. *(YRDP Impact FISH-PP-21, FISH-FPP-21, FISH-FAlt1-21, FISH-Alt2-21, FISH-FAlt2-21, FISH-NP-21)*	LTS	LTS		LTS		LTS	LTS
Operations-related impacts on fisheries resources in YB/DS reaches upstream of the YRDP. *(YB/DS Impact FISH-FAlt1-1)*				LTS			

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Cumulative impacts to fisheries resources in the Project Area. *(YRDP Cumulative Impact FISH-PP-1, FISH-Alt1-1, FISH-Alt2-1)*	LTS		LTS		SU		
Chapter 10 – Non-Fisheries Biological Resources							
Construction Impacts on Special-Status Species *(YRDP Impact BIO-PP-1, BIO-Alt1-1, BIO-Alt2-1, BIO-NP-1)*	LTSM		LTSM		LTSM		NI
Operations Impacts on Special-Status Species (Upstream of Englebright Dam) *(YRDP Impact BIO-PP-2, BIO-FPP-2, BIO-FAlt1-2, , BIO-FAlt2-2, BIO-NP-2)*	LTS	LTS		LTS		LTS	NI
Construction Impacts on Riparian Habitat and Sensitive Natural Communities *(YRDP Impact BIO-PP-3, BIO-Alt1-3, BIO-Alt2-3, BIO-NP-3)*	LTSM		LTSM		LTSM		NI
Operations Impacts on Riparian Habitat and Sensitive Natural Communities (Upstream of Englebright Dam) *(YRDP Impact BIO-PP-4, BIO-FPP-4, BIO-FAlt1-4, BIO-FAlt2-4, BIO-NP-4)*	B	B		B		LTS	NI
Construction Impacts on Wildlife Movement *(YRDP Impact BIO-PP-5, BIO-Alt1-5, BIO-Alt2-5, BIO-NP-5)*	LTS		LTS		LTS		NI
Operations Impacts on Wildlife Movement (Upstream of Englebright Dam) *(YRDP Impact BIO-PP-6, BIO-Alt1-6, BIO-Alt2-6, BIO-NP-6)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Construction Conflict With Local Policies or Ordinances Protecting Biological Resources *(YRDP Impact BIO-PP-7, BIO-Alt1-7, BIO-Alt2-7, BIO-NP-7)*	LTSM		LTSM		LTSM		NI
Operations Conflict With Local Policies or Ordinances Protecting Biological Resources (Upstream of Englebright Dam) *(YRDP Impact BIO-PP-8, BIO-Alt1-8, BIO-Alt2-8, BIO-NP-8)*	LTS		LTS		LTS		NI
Operations Impacts on Special-Status Species (Lower Yuba River) *(YRDP Impact BIO-PP-9, BIO-FPP-9, BIO-FAlt1-9, BIO-FAlt2-9, BIO-NP-9)*	LTS	LTS		LTS		LTS	NI
Operations Impacts on Riparian Habitat and Sensitive Natural Communities (Lower Yuba River) *(YRDP Impact BIO-PP-10, BIO-FPP-10, BIO-FAlt1-10, BIO-FAlt2-10, BIO-NP-10)*	B	B		B		B	NI
Operations Impacts on Wildlife Movement Corridors (Lower Yuba River) *(YRDP Impact BIO-PP-11, BIO-Alt1-11, BIO-Alt2-11, BIO-NP-11)*	LTS		LTS		LTS		NI
Operations Conflict With Local Policies or Ordinances Protecting Biological Resources (Lower Yuba River) *(YRDP Impact BIO-PP-12, BIO-Alt1-12, BIO-Alt2-12, BIO-NP-12)*	LTS		LTS		LTS		NI
Indirect Impacts on Non-fisheries Biological Resources on Affected Stream Reaches Above the YRDP from YB/DS Operations under Alternative 1 *(Indirect Impact BIO-Alt1-1)*				LTS/PB			

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Potential for significant cumulative non-fisheries biological impacts resulting from the YRDP. *(YRDP Cumulative Impact BIO-PP-1, BIO-Alt1-1, BIO-Alt2-1)*	LTS		LTS		LTS		
Chapter 11 - Recreation							
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. *(YRDP Impact REC-PP-1, REC-FPP-1, REC-FAlt1-1, REC-FAlt2-1, REC-NP-1)*	LTS	LTS		LTS		PSU	NI
Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. *(YRDP Impact REC-PP-2, REC-Alt1-2, REC-Alt2-2, REC-NP-2)*	LTS		LTS		LTS		NI
Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities such that Substantial Physical Deterioration of the Facility Would Occur or Be Accelerated due to YB/DS Operations under Alternative 1 *(Indirect Impact REC-FAlt1-1)*				LTS			
Potential for significant cumulative recreation impacts *(YRDP Cumulative Impact REC-PP-1, REC-Alt1-1, REC Alt2-1)*	LTS		LTS		S		
Chapter 12 – Visual Resources							
Construction-related impacts on a Scenic Vista (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-1, VIS-Alt1-1, VIS-Alt2-1, VIS-NP-1)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations-related Impacts on a Scenic Vista (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-2, VIS-Alt1-2, VIS-Alt2-2, VIS-NP-2)*	LTS		LTS		LTS		NI
Construction-related impacts on a Scenic Resource within a State Scenic Highway (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-3, VIS-Alt1-3, VIS-Alt2-3, VIS-NP-3)*	NI		NI		NI		NI
Operations-related Impacts on a Scenic Resource within a State Scenic Highway (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-4, VIS-Alt1-4, VIS-Alt2-4, VIS-NP-4)*	NI		NI		NI		NI
Construction-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-5, VIS-Alt1-5, VIS-Alt2-5, VIS-NP-5)*	LTS		LTS		LTS		NI
Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-6, VIS-Alt1-6, VIS-Alt2-6, VIS-NP-6)*	LTS		LTS		LTS		NI
Introduction of a New Source of Substantial Light and Glare during Construction (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-7, VIS-Alt1-7, VIS-Alt2-7, VIS-NP-7)*	LTSM		LTSM		LTSM		NI
Introduction of a New Source of Substantial Light and Glare during Operations (Upstream of Englebright Dam) *(YRDP Impact VIS-PP-8, VIS-Alt1-8, VIS-Alt2-8, VIS-NP-8)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations-related Impacts on a Scenic Vista (Lower Yuba River) *(YRDP Impact VIS-PP-9, VIS-Alt1-9, VIS-Alt2-9, VIS-NP-9)*	NI		NI		NI		NI
Operations-related Impacts on a Scenic Resource within a State Scenic Highway (Lower Yuba River) *(YRDP Impact VIS-PP-10, VIS-Alt1-10, VIS-Alt2-10, VIS-NP-10)*	NI		NI		NI		NI
Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings (Lower Yuba River) *(YRDP Impact VIS-PP-11, VIS-Alt1-11, VIS-Alt2-11, VIS-NP-11)*	LTS		LTS		LTS		NI
Introduction of a New Source of Substantial Light and Glare during Operations (Lower Yuba River) *(YRDP Impact VIS-PP-12, VIS-Alt1-12, VIS-Alt2-12, VIS-NP-12)*	NI		NI		NI		NI
Indirect impacts of YB/DS operations on visual resources in reaches upstream of the YRDP *(Indirect Impact VIS-Alt1-1)*				LTS			
Potential for significant cumulative visual resource impacts resulting from the YRDP *(YRDP Cumulative Impact VIS-PP-1, VIS-Alt1-1, VIS-Alt2-1)*	LTS		LTS		LTS		
Chapter 13 – Cultural Resources							
Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource *(YRDP Impact CULT-PP-1, CULT-Alt1-1, CULT-Alt2-1, CULT-NP-1)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource *(YRDP Impact CULT-PP-2, CULT-Alt1-2, CULT-Alt2-2, CULT-NP-2)*	LTS		LTS		LTS		NI
Project Impacts That May Disturb any Human Remains *(YRDP Impact CULT-PP-3, CULT-Alt1-3, CULT-Alt2-3, CULT-NP-3)*	LTSM		LTSM		LTSM		NI
Indirect Impacts to Cultural Resources Upstream of YRDP from YB/DS Operations under Alternative 1 *(Indirect Impact CULT-Alt1-1)*			LTS				
Cumulative Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains *(YRDP Cumulative Impact CULT-PP-1, CULT-Alt1-1, CULT-Alt2-1)*	LTS		LTS		LTS		
Chapter 14 – Tribal Cultural Resources							
Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources *(YRDP Impact TCR-PP-1, TCR-Alt1-1, TCR-Alt2-1, TCR-NP-1)*	LTS		LTS		LTS		LTS
Cumulative Project Impacts That May Cause a Substantial Adverse Change in the Significance of a TCR Listed or Eligible for Listing in the CRHR, or in a Local Register of Historical Resources *(YRDP Cumulative Impact TCR-PP-1, TCR-Alt1-1, TCR-Alt2-1)*	LTS		LTS		LTS		

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Chapter 15 – Air Quality and Greenhouse Gas Emissions							
Conflicts with Applicable Air Quality Plan from Construction Activities *(YRDP Impact AQ-PP-1, AQ-Alt1-1, AQ-Alt2-1, AQ-NP-1)*	LTSM		LTSM		LTSM		NI
Conflicts with Applicable Air Quality Plan from Operations *(YRDP Impact AQ-PP-2, AQ-Alt1-2, AQ-Alt2-2, AQ-NP-2)*	SU		SU		SU		LTS
Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction Activities *(YRDP Impact AQ-PP-3, AQ-Alt1-3, AQ-Alt2-3, AQ-NP-3)*	LTSM		LTSM		LTSM		NI
Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations *(YRDP Impact AQ-PP-4, AQ-Alt1-4, AQ-Alt2-4, AQ-NP-4)*	SU		SU		SU		LTS
Expose sensitive receptors to substantial pollutant concentrations *(YRDP Impact AQ-PP-5, AQ-Alt1-5, AQ-Alt2-5, AQ-NP-5)*	LTS		LTS		LTS		LTS
Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people (YRDP Impact AQ-PP-6, AQ-Alt1-6, AQ-Alt2-6, AQ-NP-6)	LTSM		LTSM		LTSM		LTS
Generation of GHG Emissions from Construction Activities *(YRDP Impact GHG-PP-1, GHG-Alt1-1, GHG-Alt2-1, GHG-NP-1)*	SU		SU		SU		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Generation of GHG Emissions from Operations *(YRDP Impact GHG-PP-2, GHG-Alt1-2, GHG-Alt2-2, GHG-NP-2)*	SU		SU		SU		SU
Conflict with a GHG Reduction Plan *(YRDP Impact GHG-PP-3, GHG-Alt1-3, GHG-Alt2-3, GHG-NP-3)*	SU		SU		SU		SU
Indirect impacts from YB/DS operations under Alternative 1 *(Indirect Impact GHG-Alt1-1)*			PSU				
Cumulative Air Quality Impacts *(YRDP Cumulative Impact AQ-PP-1, AQ-Alt1-1, AQ-Alt2-1)*	SU		SU		SU		
Cumulative GHG Impacts *(YRDP Cumulative Impact GHG-PP-1, GHG-Alt1-1, GHG-Alt2-1, GHG-NP-1)*	SU		SU		SU		SU
Chapter 16 – Geology and Soils							
Construction of proposed facilities, or operation of existing facilities, that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides *(YRDP Impact GEO-PP-1, GEO-Alt1-1, GEO-Alt2-1,GEO-NP-1)*	LTS		LTS		LTS		LTS
Construction of proposed facilities, or operation of existing facilities, which could result in substantial erosion or the loss of topsoil *(YRDP Impact GEO-PP-2, GEO-Alt1-2, GEO-Alt2-2, GEO-NP-2)*	LTS		LTS		LTS		LTS

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Construction of proposed facilities, or operation of existing facilities, that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse *(YRDP Impact GEO-PP-3, GEO-Alt1-3, GEO-Alt2-3, GEO-NP-3)*	LTS		LTS		LTS		LTS
Construction of proposed facilities, or operation of existing facilities, which are located on expansive soils, creating substantial direct or indirect risk to life or property *(YRDP Impact GEO-PP-4, GEO-Alt1-4, GEO-Alt2-4, GEO-NP-4)*	LTS		LTS		LTS		LTS
Construction of proposed facilities, or operation of existing facilities, where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater *(YRDP Impact GEO-PP-5, GEO-Alt1-5, GEO-Alt2-5, GEO-NP-5)*	LTS		LTS		LTS		NI
Construction of proposed facilities, or operation of existing facilities, which would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature *(YRDP Impact GEO-PP-6, GEO-Alt1-6, GEO-Alt2-6, GEO-NP-6)*	LTS		LTS		LTS		NI
Potential for significant cumulative geology and soils impacts *(YRDP Cumulative Impact GEO-PP-1, GEO-Alt1-1, GEO-Alt2-1)*	LTS		LTS		LTS		

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Chapter 17 – Hazards and Hazardous Materials							
Construction of proposed YRDP facilities, or operations of existing YRDP facilities, Construction or expansion… that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *(YRDP Impact HAZ-PP-1, HAZ-Alt1-1, HAZ-Alt2-1, HAZ-NP-1)*	LTS		LTS		LTS		LTS
Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. *(YRDP Impact HAZ-PP-2, HAZ-Alt1-2, HAZ-Alt2-2, HAZ-NP-2)*	LTS		LTS		LTS		LTS
Construction of proposed YRDP facilities, or operations of existing YRDP facilities, that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. *(YRDP Impact HAZ-PP-3, HAZ-Alt1-3, HAZ-Alt2-3, HAZ-NP-3)*	LTS		LTS		LTS		NI
Potential for significant cumulative hazards and hazardous materials impacts *(YRDP Cumulative Impact HAZ-PP-1, HAZ-Alt1-1, HAZ-Alt2-1)*	LTS		LTS		LTS		
Chapter 18 - Wildfire							
Construction Impacts on Emergency Response Plans or Emergency Evacuation Plans *(YRDP Impact WF-PP-1, WF-Alt1-1, WF-Alt2-1, WF-NP-1)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans *(YRDP Impact WF-PP-2, WF-Alt1-2, WF-Alt2-2, WF-NP-2)*	LTSM		LTSM		LTSM		NI
Construction Impacts on Exposure of Project Occupants to Pollutant Concentrations *(YRDP Impact WF-PP-3, WF-Alt1-3, WF-Alt2-3, WF-NP-3)*	LTS		LTS		LTS		NI
Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations *(YRDP Impact WF-PP-4, WF-Alt1-4, WF-Alt2-4, WF-NP-4)*	LTS		LTS		LTS		NI
Construction Impacts Related to Installation or Maintenance of Associated Infrastructure *(YRDP Impact WF-PP-5, WF-Alt1-5, WF-Alt2-5, WF-NP-5)*	LTS		LTS		LTS		NI
Operational Impacts Related to Installation or Maintenance of Associated Infrastructure *(YRDP Impact WF-PP-6, WF-Alt1-6, WF-Alt2-6, WF-NP-6)*	LTS		LTS		LTS		NI
Construction Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes *(YRDP Impact WF-PP-7, WF-Alt1-7, WF-Alt2-7, WF-NP-7)*	LTS		LTS		LTS		NI
Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes *(YRDP Impact WF-PP-8, WF-Alt1-8, WF-Alt2-8, WF-NP-8)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires *(YRDP Impact WF-PP-9, WF-Alt1-9, WF-Alt2-9, WF-NP-9)*	LTSM		LTSM		LTSM		NI
Potential for significant cumulative wildfire impacts resulting from the YRDP *(YRDP Cumulative Impact WF-PP-1, WF-Alt1-1, WF-Alt2-1)*	LTS		LTS		LTS		
Chapter 19 - Transportation							
Construction Impacts on Transportation Plans *(YRDP Impact TRANS-PP-1, TRANS-Alt1-1, TRANS-Alt2-1, TRANS-NP-1)*	LTS		LTS		LTS		NI
Operational Impacts on Transportation Plans *(YRDP Impact TRANS-PP-2, TRANS-Alt1-2, TRANS-Alt2-2, TRANS-NP-2)*	LTS		LTS		LTS		NI
Construction Impacts on Consistency with CEQA Guidelines §15064.3 *(YRDP Impact TRANS-PP-3, TRANS-Alt1-3, TRANS-Alt2-3, TRANS-NP-3)*	SU		SU		SU		NI
Operational Impacts on Consistency with CEQA Guidelines §15064.3 *(YRDP Impact TRANS-PP-4, TRANS-Alt1-4, TRANS-Alt2-4, TRANS-NP-4)*	SU		SU		SU		NI
Construction Impacts on Hazards and Emergency Access *(YRDP Impact TRANS-PP-5, TRANS-Alt1-5, TRANS-Alt2-5, TRANS-NP-5)*	LTS		LTS		LTS		NI
Operational Impacts on Hazards and Emergency Access *(YRDP Impact TRANS-PP-6, TRANS-Alt1-6, TRANS-Alt2-6, TRANS-NP-6)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Potential for significant cumulative transportation impacts resulting from the YRDP *(YRDP Cumulative Impact TRANS-PP-1, TRANS-Alt1-1, TRANS-Alt2-1)*	SU		SU		SU		
Chapter 20 - Noise							
Construction Impacts on Ambient Noise *(YRDP Impact NOISE-PP-1, NOISE-Alt1-1, NOISE-Alt2-1, NOISE-NP-1)*	LTSM		LTSM		LTSM		NI
Operational Impacts on Ambient Noise *(YRDP Impact NOISE-PP-2, NOISE-Alt1-2, NOISE-Alt2-2, NOISE-NP-2)*	LTS		LTS		LTS		LTS
Construction Impacts on Ground-borne Vibration *(YRDP Impact NOISE-PP-3, NOISE-Alt1-3, NOISE-Alt2-3, NOISE-NP-3)*	LTS		LTS		LTS		NI
Operational Impacts on Ground-Borne Vibration *(YRDP Impact NOISE-PP-4, NOISE-Alt1-4, NOISE-Alt2-4, NOISE-NP-4)*	LTS		LTS		LTS		LTS
Potential for significant cumulative noise and vibration impacts resulting from the YRDP. *(YRDP Cumulative Impact NOISE-PP-1, NOISE-Alt1-1, NOISE-Alt2-1)*	LTS		LTS		LTS		
Chapter 21 – Agriculture and Forestry Resources							
Construction Impacts on Conversion of Farmland *(YRDP Impact AG-PP-1, AG-Alt1-1, AG-Alt2-1, AG-NP-1)*	NI		NI		NI		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operational Impacts on Conversion of Farmland *(YRDP Impact AG-PP-2, AG-Alt1-2, AG-Alt2-2, AG-NP-2)*	NI		NI		NI		NI
Construction Impacts on Agricultural Zoning and Williamson Act Lands *(YRDP Impact AG-PP-3, AG-Alt1-3, AG-Alt2-3, AG-NP-3)*	NI		NI		NI		NI
Operational Impacts on Agricultural Zoning and Williamson Act Lands *(YRDP Impact AG-PP-4, AG-Alt1-4, AG-Alt2-4, AG-NP-4)*	NI		NI		NI		NI
Construction Impacts on Zoning of Forest Land *(YRDP Impact AG-PP-5, AG-Alt1-5, AG-Alt2-5, AG-NP-5)*	LTS		LTS		LTS		NI
Operational Impacts on Zoning of Forest Land *(YRDP Impact AG-PP-6, AG-Alt1-6, AG-Alt2-6, AG-NP-6)*	LTS		LTS		LTS		NI
Construction Impacts on Loss or Conversion of Forest Land *(YRDP Impact AG-PP-7, AG-Alt1-7, AG-Alt2-7, AG-NP-7)*	LTS		LTS		LTS		NI
Operational Impacts on Loss or Conversion of Forest Land *(YRDP Impact AG-PP-8, AG-Alt1-8, AG-Alt2-8, AG-NP-8)*	LTS		LTS		LTS		NI
Construction Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land *(YRDP Impact AG-PP-9, AG-Alt1-9, AG-Alt2-9, AG-NP-9)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land *(YRDP Impact AG-PP-10, AG-Alt1-10, AG-Alt2-10, AG-NP-10)*	LTS		LTS		LTS		LTS
Cumulative Impacts on Agriculture and Forestry Resources *(YRDP Cumulative Impact AG-PP-1, AG-Alt1-1, AG-Alt2-1)*	LTS		LTS		LTS		
Chapter 22 – Land Use and Planning							
Construction Impacts on Land Use and Planning (Upstream of Englebright Dam) *(YRDP Impact LUP-PP-1, LUP-Alt1-1, LUP-Alt2-1, LUP-NP-1)*	LTS		LTS		LTS		NI
Operational Impacts on Land Use and Planning (Upstream of Englebright Dam) *(YRDP Impact LUP-PP-2, LUP-Alt1-2, LUP-Alt2-2, LUP-NP-2)*	LTS		LTS		LTS		NI
Cumulative Impacts on Land Use and Planning *(YRDP Cumulative Impact LUP-PP-1, LUP-Alt1-1, LUP-Alt2-1)*	LTS		LTS		LTS		
Chapter 23 – Public Services							
Construction Impacts on Fire Protection Services *(YRDP Impact PS-PP-1, PS-Alt1-1, PS-Alt2-1, PS-NP-1)*	NI		NI		NI		NI
Operational Impacts on Fire Protection Services *(YRDP Impact PS-PP-2, PS-Alt1-2, PS-Alt2-2, PS-NP-2)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Construction Impacts on Police Protection Services *(YRDP Impact PS-PP-3, PS-Alt1-3, PS-Alt2-3, PS-NP-3)*	NI		NI		NI		NI
Operational Impacts on Police Protection Services *(YRDP Impact PS-PP-4, PS-Alt1-4, PS-Alt2-4, PS-NP-4)*	NI		NI		NI		NI
Potential for significant cumulative public service impacts resulting from the YRDP *(YRDP Cumulative Impact PS-PP-1, PS-Alt1-1, PS-Alt2-1)*	LTS		LTS		LTS		
Chapter 24 – Utilities and Service Systems							
Relocation or Construction of New or Expanded Infrastructure *(YRDP Impact UTIL-PP-1, UTIL-Alt1-1, UTIL-Alt2-1, UTIL-NP-1)*	LTSM		LTSM		LTSM		NI
Construction Impacts on Water Supplies *(YRDP Impact UTIL-PP-2, UTIL-Alt1-2, UTIL-Alt2-2, UTIL-NP-2)*	LTS		LTS		LTS		NI
Operations Impacts on Water Supplies *(YRDP Impact UTIL-PP-3, UTIL-Alt1-3, UTIL-Alt2-3, UTIL-NP-3)*	LTS		LTS		LTS		NI
Operations Impacts on Wastewater Treatment *(YRDP Impact UTIL-PP-4, UTIL-Alt1-4, UTIL-Alt2-4, UTIL-NP-4)*	LTS		LTS		LTS		NI
Construction Impacts on Solid Waste and Compliance with Solid Waste Regulations *(YRDP Impact UTIL-PP-5, UTIL-Alt1-5, UTIL-Alt2-5, UTIL-NP-5)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed YRDP		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations Impacts on Solid Waste and Compliance with Solid Waste Regulations *(YRDP Impact UTIL-PP-6, UTIL-Alt1-6, UTIL-Alt2-6, UTIL-NP-6)*	LTS		LTS		LTS		NI
Potential for significant cumulative utilities impacts *(YRDP Cumulative Impact UTIL-PP-1, UTIL-Alt1-1, UTIL-Alt2-1)*	LTS		LTS		LTS		

Notes:
S – Significant; SU – Significant and Unavoidable; PSU – Potentially Significant and Unavoidable
LTS – Less Than Significant; LTSM – Less Than Significant with Mitigation Incorporated; NI – No Impact
B – Beneficial; PB – Potentially Beneficial

Table 25.5-2. Comparison of Proposed Projects and Alternatives (Proposed Narrows Relicensing Project).

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Chapter 5 - Surface Water Resources							
Rate or Amount of Surface Runoff *(Narrows Impact SW-PP-1, SW-FPP-1, SW-FAlt1-1, SW-FAlt2-1, SW-NP-1)*	LTS	LTS		LTS		LTS	LTS
Impede or Redirect Flood Flows *(Narrows Impact SW-PP-2, SW-FPP-2, SW-FAlt1-2, SW-FAlt2-2, SW-NP-2)*	LTS	LTS		LTS		LTS	LTS
Water Supply Shortages from Narrows Operations *(Narrows Impact SW-PP-3, SW-FPP-3, SW-FAlt1-3, SW-FAlt2-3, SW-NP-3)*	LTS	LTS		LTS		LTS	LTS
Yuba Accord Transfers Resulting from Narrows Operations *(Narrows Impact SW-PP-4, SW-FPP-4, SW-FAlt1-4, SW-FAlt2-4, SW-NP-4)*	LTS	LTS		LTS		LTS	LTS

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Cumulative Impacts to Surface Water Resources *(Narrows Cumulative Impact SW-PP-1, SW-Alt1-1, and SW-Alt2-1)*	LTS		LTS		LTS		
Chapter 6 – Groundwater Resources							
Operational Impacts on Groundwater Levels and Sustainability Indicators *(Narrows Impact GW-PP-1, GW-FPP-1, GW-FAlt1-1, GW-FAlt2-1, GW-NP-1)*	LTS	LTS		LTS		LTS	NI
Cumulative Operational Impacts on Groundwater *(Narrows Cumulative Impact GW-PP-1, GW-Alt1-1, GW-Alt2-1)*	LTS		LTS		LTS		
Chapter 7 - Energy							
Change in Monthly Generation from Narrows 1 Operations *(Narrows Impact EN-PP-1, EN-FPP-1, EN-FAlt1-1, EN-FAlt2-1, EN-NP-1)*	LTS	LTS		LTS		PSU	PSU
Change in Monthly Generation Capacity from Narrows 1 Operations *(Narrows Impact EN-PP-2, EN-FPP-2, EN-FAlt1-2, EN-FAlt2-2, EN-NP-2)*	LTS	LTS		LTS		LTS	PSU
Reduction in Generation-Related Revenue from Narrows 1 Operations *(Narrows Impact EN-PP-3, EN-FPP-3, EN-FAlt1-3, EN-FAlt2-3, EN-NP-3)*	LTS	LTS		LTS		LTS	PSU
Energy Consumption by Narrows 1 Operations *(Narrows Impact EN-PP-4, EN-Alt1-4, EN-Alt2-4, EN-NP-4)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Narrows Operational Conflicts with Renewable Energy or Energy Efficiency Plans *(Narrows Impact EN-PP-5, EN-Alt1-5, EN-Alt2-5, EN-NP-5)*	LTS		LTS		LTS		PSU
Cumulative impacts to power production and energy consumption *(Narrows Cumulative Impact EN-PP-1, EN-Alt1-1, EN-Alt2-1, EN-NP-1)*	LTS		LTS		SU		SU
Chapter 8 - Surface Water Quality							
Impacts on Surface Water Quality from Operation of the Narrows Project *(Narrows Impact WQ-PP-1, WQ-FPP-1, WQ-FAlt1-1, WQ-FAlt2-1, WQ-NP-1)*	LTS	LTS		LTS		LTS	LTS
Cumulative Impacts on Surface Water Quality from Operation and Maintenance of the Narrows Project *(Narrows Cumulative Impact WQ-PP-1, WQ-Alt1-1, WQ-Alt2-1)*	LTS		LTS		LTS		
Chapter 9 – Fisheries Resources							
Construction-related impacts in areas upstream of Englebright Dam. *(Narrows Impact FISH-PP-1, FISH-Alt1-1, FISH-Alt2-1, FISH-NP-1)*	NI		NI		NI		LTS
Construction-related impacts in the lower Yuba River. *(Narrows Impact FISH-PP-2, FISH-Alt1-2, FISH-Alt2-2, FISH-NP-2)*	NI		NI		NI		LTS
Operations-related impacts in areas upstream of Englebright Dam. *(Narrows Impact FISH-PP-3, FISH-FPP-3, FISH-Alt1-3, FISH-Alt2-3, FISH-NP-3)*	LTS	LTS	LTS	LTS	LTS	LTS	LTS

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations-related impacts in the lower Yuba River. *(Narrows Impact FISH-PP-4, FISH-FPP-4, FISH-Alt1-4, FISH-Alt2-4, FISH-NP-4)*	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Narrows Project consistency with the provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans. *(Narrows Impact FISH-PP-5, FISH-FPP-5, FISH-FAlt1-5, FISH-FAlt2-5, FISH-NP-5)*	LTS	LTS		LTS		LTS	LTS
Cumulative impacts to fisheries resources in the Project Area. *(Narrows Cumulative Impact FISH-PP-1, FISH-Alt1-1, FISH-Alt2-1)*	LTS		LTS		LTS		
Chapter 10 – Non-Fisheries Biological Resources							
Operations Impacts on Special-Status Species *(Narrows Impact BIO-PP-1, BIO-FPP-1, BIO-FAlt1-1, BIO-FAlt2-1, BIO-NP-1)*	LTS	LTS		LTS		LTS	NI
Operations Impacts on Riparian Habitat and Sensitive Natural Communities *(Narrows Impact BIO-PP-2, BIO-FPP-2, BIO-FAlt1-2, BIO-FAlt2-2, BIO-NP-2)*	NI	NI		NI		NI	NI
Operations Impacts on Wildlife Movement Corridors *(Narrows Impact BIO-PP-3, BIO-Alt1-3, BIO-Alt2-3, BIO-NP-3)*	LTS		LTS		LTS		NI
Operations <u>Conflict with any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance</u> *(Narrows Impact BIO-PP-4, BIO-Alt1-4, BIO-Alt2-4, BIO-NP-4)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Potential for significant cumulative non-fisheries biological impacts resulting from the Narrows Project. *(Narrows Cumulative Impact BIO-PP-1, BIO-Alt1-1, BIO-Alt2-1)*	LTS		LTS		LTS		
Chapter 11 - Recreation							
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. *(Narrows Impact REC-PP-1, REC-FPP-1, REC-FAlt1-1, REC-FAlt2-1, REC-NP-1)*	LTS	LTS		LTS		LTS	NI
Potential for significant cumulative recreation impacts *(Narrows Cumulative Impact REC-PP-1, REC-Alt1-1, REC Alt2-1)*	LTS		LTS		LTS		
Chapter 12 – Visual Resources							
Operations-related Impacts on a Scenic Vista *(Narrows Impact VIS-PP-1, VIS-Alt1-1, VIS-Alt2-1, VIS-NP-1)*	NI		NI		NI		NI
Operations-related Impacts on a Scenic Resource within a State Scenic Highway *(Narrows Impact VIS-PP-2, VIS-Alt1-2, VIS-Alt2-2, VIS-NP-2)*	NI		NI		NI		NI
Operations-related Impacts on the Existing Visual Character or Quality of the Site and its Surroundings *(Narrows Impact VIS-PP-3, VIS-Alt1-3, VIS-Alt2-3, VIS-NP-3)*	NI		NI		NI		NI

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Introduction of a New Source of Substantial Light and Glare during Operations *(Narrows Impact VIS-PP-4, VIS-Alt1-4, VIS-Alt2-4, VIS-NP-4)*	NI		NI		NI		NI
Potential for significant cumulative visual resource impacts *(Narrows Cumulative Impact VIS-PP-1, VIS-Alt1-1, VIS-Alt2-1)*	LTS		LTS		LTS		
Chapter 13 – Cultural Resources							
Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource *(Narrows Impact CULT-PP-1, CULT-Alt1-1, CULT-Alt2-1, CULT-NP-1)*	NI		NI		LTS		NI
Project Impacts That May Cause a Substantial Adverse Change in the Significance of an Archaeological Resource *(Narrows Impact CULT-PP-2, CULT-Alt1-2, CULT-Alt2-2, CULT-NP-2)*	NI		LTS		NI		NI
Project Impacts That May Disturb any Human Remains *(Narrows Impact CULT-PP-3, CULT-Alt1-3, CULT-Alt2-3, CULT-NP-3)*	LTSM		LTSM		LTSM		NI
Cumulative Project Impacts That May Cause a Substantial Adverse Change in the Significance of a Historical Resource and/or Archaeological Resource, and/or Disturbance of Human Remains *(Narrows Cumulative Impact CULT-PP-1, CULT-Alt1-1, CULT-Alt2-1)*	LTS		LTS		LTS		
Chapter 14 – Tribal Cultural Resources							
No Narrows Project Impacts.							

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Chapter 15 – Air Quality and Greenhouse Gas Emissions							
Conflicts with Applicable Air Quality Plan from Construction *(Narrows Impact AQ-PP-1, AQ-Alt1-1, AQ-Alt2-1, AQ-NP-1)*	NI		NI		NI		NI
Conflicts with Applicable Air Quality Plan from Operations *(Narrows Impact AQ-PP-2, AQ-Alt1-2, AQ-Alt2-2, AQ-NP-2)*	LTS		LTS		LTS		LTS
Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Construction *(Narrows Impact AQ-PP-3, AQ-Alt1-3, AQ-Alt2-3, AQ-NP-3)*	NI		NI		NI		NI
Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard from Operations *(Narrows Impact AQ-PP-4, AQ-Alt1-4, AQ-Alt2-4, AQ-NP-4)*	LTS		LTS		LTS		LTS
Expose sensitive receptors to substantial pollutant concentrations *(Narrows Impact AQ-PP-5, AQ-Alt1-5, AQ-Alt2-5, AQ-NP-5)*	LTS		LTS		LTS		LTS
Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people *(Narrows Impact AQ-PP-6, AQ-Alt1-6, AQ-Alt2-6, AQ-NP-6)*	LTS		LTS		LTS		LTS
Generation of GHG Emissions from Operations *(Narrows Impact GHG-PP-1, GHG-Alt1-1, GHG-Alt2-1, GHG-NP-1)*	LTS		LTS		LTS		SU

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Conflict with a GHG Reduction Plan *(Narrows Impact GHG-PP-2, GHG-Alt1-2, GHG-Alt2-2, GHG-NP-2)*	LTS		LTS		LTS		SU
Potential for significant cumulative air quality impact resulting from the Narrows Project *(Narrows Cumulative Impact AQ-PP-1, AQ-Alt1-1, AQ-Alt2-1)*	LTS		LTS		LTS		
Potential for significant cumulative GHG impact resulting from the Narrows Project *(Narrows Cumulative Impact GHG-PP-1, GHG-Alt1-1, GHG-Alt2-1, GHG-NP-1)*	LTS		LTS		LTS		SU
Chapter 16 – Geology and Soils							
Operations of existing Narrows Project facilities that could directly or indirectly cause potential adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. *(Narrows Impact GEO-PP-1, GEO-Alt1-1, GEO-Alt2-1, GEO-NP-1)*	LTS		LTS		LTS		LTS
Operations of existing Narrows Project facilities that could result in substantial erosion or the loss of topsoil *(Narrows Impact GEO-PP-2, GEO-Alt1-2, GEO-Alt2-2, GEO-NP-2)*	LTS		LTS		LTS		LTS
Operations of existing Narrows Project facilities that are located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse *(Narrows Impact GEO-PP-3, GEO-Alt1-3, GEO-Alt2-3, GEO-NP-3)*	LTS		LTS		LTS		LTS

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations of existing Narrows Project facilities that are located on expansive soils, creating substantial direct or indirect risk to life or property *(Narrows Impact GEO-PP-4, GEO-Alt1-4, GEO-Alt2-4, GEO-NP-4)*	LTS		LTS		LTS		LTS
Operations of existing Narrows Project facilities where soils would be incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater *(Narrows Impact GEO-PP-5, GEO-Alt1-5, GEO-Alt2-5, GEO-NP-5)*	NI		NI		NI		NI
Operations of existing Narrows Project facilities that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature *(Narrows Impact GEO-PP-6, GEO-Alt1-6, GEO-Alt2-6, GEO-NP-6)*	NI		NI		NI		NI
Potential for significant cumulative geology and soils impacts resulting from the operations of Narrows Project facilities. *(Narrows Cumulative Impact GEO-PP-1, GEO-Alt1-1, GEO-Alt2-1)*	LTS		LTS		LTS		
Chapter 17 – Hazards and Hazardous Materials							
Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *(Narrows Impact HAZ-PP-1, HAZ-Alt1-1, HAZ-Alt2-1, HAZ-NP-1)*	LTS		LTS		LTS		LTS
Operations of existing Narrows Project facilities that would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. *(Narrows Impact HAZ-PP-2, HAZ-Alt1-2, HAZ-Alt2-2, HAZ-NP-2)*	LTS		LTS		LTS		LTS

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations of existing Narrows facilities that would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan *(Narrows Impact HAZ-PP-3, HAZ-Alt1-3, HAZ-Alt2-3, HAZ-NP-3)*	NI		NI		NI		NI
Potential for significant cumulative hazards and hazardous materials impacts *(Narrows Cumulative Impact HAZ-PP-2, HAZ-Alt1-2, HAZ-Alt2-1)*	LTS		LTS		LTS		
Chapter 18 - Wildfire							
Operational Impacts on Emergency Response Plans or Emergency Evacuation Plans *(Narrows Impact WF-PP-1, WF-Alt1-1, WF-Alt2-1, WF-NP-1)*	LTS		LTS		LTS		NI
Operational Impacts on Exposure of Project Occupants to Pollutant Concentrations or Uncontrolled Spread of Wildfire *(Narrows Impact WF-PP-2, WF-Alt1-2, WF-Alt2-2, WF-NP-2)*	LTS		LTS		LTS		NI
Operational Impacts Related to Installation or Maintenance of Associated Infrastructure *(Narrows Impact WF-PP-3, WF-Alt1-3, WF-Alt2-3, WF-NP-3)*	LTS		LTS		LTS		NI
Operational Impacts on Exposure of People or Structures to Significant Risks Resulting from Runoff, Post-fire Slope Instability, or Drainage Changes *(Narrows Impact WF-PP-4, WF-Alt1-4, WF-Alt2-4, WF-NP-4)*	LTS		LTS		LTS		NI

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Exposure of People or Structures to a Significant Risk of Loss, Injury or Death Involving Wildland Fires *(Narrows Impact WF-PP-5, WF-Alt1-5, WF-Alt2-5, WF-NP-5)*	LTS		LTS		LTS		NI
Potential for significant cumulative wildfire impacts resulting from the Narrows Project. *(Narrows Cumulative Impact WF-PP-1, WF-Alt1-1, WF-Alt2-1)*	LTS		LTS		LTS		
Chapter 19 - Transportation							
Operational Impacts on Transportation Plans *(Narrows Impact TRANS-PP-1, TRANS-Alt1-1, TRANS-Alt2-1, TRANS-NP-1)*	NI		NI		NI		NI
Operational Impacts on Consistency with CEQA Guidelines §15064.3 *(Narrows Impact TRANS-PP-2, TRANS-Alt1-2, TRANS-Alt2-2, TRANS-NP-2)*	NI		NI		NI		NI
Operational Impacts on Hazards and Emergency Access *(Narrows Impact TRANS-PP-3, TRANS-Alt1-3, TRANS-Alt2-3, TRANS-NP-3)*	NI		NI		NI		NI
Potential for significant cumulative transportation impacts resulting from the Narrows Project *(Narrows Cumulative Impact TRANS-PP-1, TRANS-Alt1-1, TRANS-Alt2-1)*	NI		NI		NI		
Chapter 20 - Noise							
Operational Impacts on Ambient Noise *(Narrows Impact NOISE-PP-1, NOISE-Alt1-1, NOISE-Alt2-1, NOISE-NP-1)*	NI		NI		NI		LTS

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operational Impacts on Groundborne Vibration *(Narrows Impact NOISE-PP-2, NOISE-Alt1-2, NOISE-Alt2-2, NOISE-NP-2)*	NI		NI		NI		LTS
Potential for significant cumulative noise and vibration impacts resulting from the Narrows Project. *(Narrows Cumulative Impact NOISE-PP-1, NOISE-Alt1-1, NOISE-Alt2-1)*	NI		NI		NI		
Chapter 21 – Agriculture and Forestry Resources							
Operational Impacts on Conversion of Farmland *(Narrows Impact AG-PP-1, AG-Alt1-1, AG-Alt2-1, AG-NP-1)*	NI		NI		NI		NI
Operational Impacts on Farmland and Agricultural Zoning and Williamson Act Lands *(Narrows Impact AG-PP-2, AG-Alt1-2, AG-Alt2-2, AG-NP-2)*	LTS		LTS		LTS		NI
Operational Impacts on Zoning of Forest Land *(Narrows Impact AG-PP-3, AG-Alt1-3, AG-Alt2-3, AG-NP-3)*	LTS		LTS		LTS		NI
Operational Impacts on Loss or Conversion of Forest Land *(Narrows Impact AG-PP-4, AG-Alt1-4, AG-Alt2-4, AG-NP-4)*	LTS		LTS		LTS		NI
Operational Impacts Resulting in Other Changes Leading to Conversion of Farmland or Forest Land *(Narrows Impact AG-PP-5, AG-Alt1-5, AG-Alt2-5, AG-NP-5)*	LTS		LTS		LTS		LTS

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Cumulative Impacts on Agricultural and Forestry Resources *(Narrows Cumulative Impact AG-PP-1, AG-Alt1-1, AG-Alt2-1)*	LTS		LTS		LTS		
Chapter 22 – Land Use and Planning							
Operational Impacts on Land Use and Planning *(Narrows Impact LUP-PP-1, LUP-Alt1-1, LUP-Alt2-1, LUP-NP-1)*	LTS		LTS		LTS		NI
Potential for significant cumulative land use and planning impacts resulting from the Narrows Project *(Narrows Cumulative Impact LUP-PP-1, LUP-Alt1-1, LUP-Alt2-1)*	LTS		LTS		LTS		
Chapter 23 – Public Services							
Operational Impacts on Fire Protection Services *(Narrows Impact PS-PP-1, PS-Alt1-1, PS-Alt2-1, PS-NP-1)*	NI		NI		NI		NI
Operational Impacts on Police Protection Services *(Narrows Impact PS-PP-2, PS-Alt1-2, PS-Alt2-2, PS-NP-2)*	NI		NI		NI		NI
Potential for significant cumulative public service impacts resulting from the Narrows Project. *(Narrows Cumulative Impact PS-PP-1, PS-Alt1-1, PS-Alt2-1)*	NI		NI		NI		
Chapter 24 – Utilities and Service Systems							
Operations Impacts on Utilities and Service Systems *(Narrows Impact UTIL-PP-1, UTIL-Alt1-1, UTIL-Alt2-1, UTIL-NP-1)*	NI		NI		NI		NI

Environmental Impact	Proposed Projects		Alternative 1		Alternative 2		No Project
	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition	Future Baseline	Existing Condition
Operations Impacts on Solid Waste *(Narrows Impact UTIL-PP-2, UTIL-Alt1-2, UTIL-Alt2-2, UTIL-NP-2)*	NI		NI		NI		NI
Potential for significant cumulative utilities impacts resulting from the Narrows Project. *(Narrows Cumulative Impact UTIL-PP-1, UTIL-Alt1-1, UTIL-Alt2-1)*	NI		NI		NI		

25.5.2 Comparison with Project Objectives

Chapter 2, Project Description, sets forth the objectives of the Proposed Projects. There are ten project objectives pertinent to the proposed YRDP, and seven pertinent to the Narrows Project. As stated in Chapter 2, a statement of objectives will help the CEQA lead agency develop a reasonable range of alternatives to evaluate in the DEIR.

Table 25.2-3 compares the Proposed Projects and alternatives, including the No Project Alternative, with the project objectives specified in Chapter 2, to determine how closely they meet the specified objectives.

Table 25.2-3. Comparison of Proposed Projects and Alternatives to Project Objectives.

Project Objective	Proposed Projects	Alternative 1	Alternative 2	No Project
YRDP Objectives				
1. Obtain a new FERC license for the YRDP under which Yuba Water can generate sufficient revenues to support its continued use, operation, and maintenance of the YRDP facilities to advance its missions established by the Legislature in the Yuba County Water Agency Act (Agency Act).	Meets objective – allows sufficient revenues for continued O&M of YRDP facilities.	Meets objective – allows sufficient revenues for continued O&M of YRDP facilities.	May not meet objective – revenues would be significantly reduced due to this alternative's impact on the generation of electricity at high-value times.	Does not meet objective – no license would be issued.

Project Objective	Proposed Projects	Alternative 1	Alternative 2	No Project
2.Obtain a new FERC license for the YRDP under which Yuba Water can generate sufficient revenues to maintain and operate Yuba Water's existing flood control facilities, and implement new flood risk reduction projects in Yuba County.	Meets objective – allows sufficient revenues for continued O&M of Yuba Water's flood control facilities.	Meets objective – allows sufficient revenues for continued O&M of YRDP facilities.	May not meet objective – revenues would be significantly reduced due to this alternative's impact on the generation of electricity at high-value times..	Does not meet objective – no license would be issued, revenues would be substantially reduced with no hydropower sales.
3.Obtain a FERC license for the YRDP under which Yuba Water can operate the YRDP to provide adequate and reliable agricultural surface water supplies within Yuba County and to maintain sustainable conditions in the North Yuba and South Yuba groundwater basins for all beneficial uses, consistent with the Sustainable Groundwater Management Act (Water Code sections 10720-10738).	Meets objective – allows continued operations of YRDP facilities to provide agricultural water supplies while meeting applicable sustainable groundwater objectives.	Meets objective – allows continued operations of YRDP facilities to provide agricultural water supplies while meeting applicable sustainable groundwater objectives.	Does not meet objective – available surface water for agricultural operations from the YRDP would be reduced, which would likely result in unsustainable conditions in the North Yuba and South Yuba groundwater basins from additional groundwater pumping and be inconsistent with SGMA.	Does not meet objective – no license would be issued.
4. Operate the YRDP to provide streamflow and water temperature benefits for sensitive fish species in the lower Yuba River, downstream of the YRDP's facilities, consistent with the benefits the YRDP has provided for those beneficial uses.	Meets objective – provides streamflow and water temperature benefits for sensitive fish species in the lower Yuba River.	Meets objective – provides enhanced streamflow and water temperature benefits for sensitive fish species in the lower Yuba River.	Does not meet objective – would not provide enhanced streamflow and water temperature benefits for sensitive fish species in the lower Yuba River consistent with the benefits the YRDP has provided for those beneficial uses.	Meets objective – would continue existing YRDP operations that currently provide streamflow and water temperature benefits for sensitive fish species in the lower Yuba River.

Project Objective	Proposed Projects	Alternative 1	Alternative 2	No Project
5. Consistent with FERC's March 2021 Additional Information Request (AIR), implement any additional protections for ESA-listed fish species in the lower Yuba River in a way that both: (a) improves Yuba River water temperatures for those species and their designated critical habitat; and (b) equitably allocates protective activities such that no entity is disproportionately burdened with a responsibility to mitigate impacts on those species caused by other entities.	May not meet objective – Would not be consistent with FERC's March 2021 AIR to equitably allocate protective activities to improve water temperatures for ESA-listed fish species in the lower Yuba River and their designated critical habitat	Meets objective – Consistent with FERC's March 2021 AIR would equitably allocate protective activities to improve water temperatures for ESA-listed fish species in the lower Yuba River and their designated critical habitat	Does not meet objective – Would not be consistent with FERC's March 2021 AIR to equitably allocate protective activities to improve water temperatures for ESA-listed fish species in the lower Yuba River and their designated critical habitat	Does not meet objective - no license would be issued, so no conditions that would benefit fish species would be implemented.
6.Continue to generate long-term, predictable revenue for Yuba Water's programs to support Yuba County's disadvantaged communities consistent with Yuba Water's mission.	Meets objective – allows sufficient revenues to support Yuba Water's programs for disadvantaged communities.	Meets objective – allows sufficient revenues to support Yuba Water's programs for disadvantaged communities	May not meet objective – revenues would be significantly reduced due to this alternative's impact on the generation of electricity at high-value times.	Does not meet objective - no license would be issued, revenues would be substantially reduced with no hydropower sales.
7.Continue to support California's power requirements by providing carbon-free hydropower generation to: (a) meet resource diversity and capacity needs within the Sierra Local Capacity Area consistent with the Agency Act, CEC regulations and CAISO energy markets. (b) To respond to requests from CAISO to provide additional power during power emergencies (e.g., heat-related shortages) to support statewide electrical grid systems.	Meets objective – allows continued generation of electricity that meets California's requirements, including carbon-free electricity and emergency power requirements..	Meets objective – allows continued generation of electricity that meets California's requirements, including carbon-free electricity and emergency power requirements..	May not meet objective – allows continued generation of electricity, but at a reduced level, particularly in the periods of highest demand for electricity.	Does not meet objective - no license for continued hydropower generation would be issued, so no electricity would be generated.

Project Objective	Proposed Projects	Alternative 1	Alternative 2	No Project
8. Continue to generate long-term, predictable revenue for Yuba Water's fisheries and aquatic habitat enhancement projects on the lower Yuba River.	Meets objective – allows sufficient revenues to support Yuba Water's programs for fisheries and aquatic habitat projects.	Meets objective – allows sufficient revenues to support Yuba Water's programs for fisheries and aquatic habitat projects.	May not meet objective – revenues would be significantly reduced.	Does not meet objective - no license would be issued, revenues would be substantially reduced with no hydropower sales.
9. Obtain stability and predictability in long-term YRDP operations to generate sufficient funds to allow Yuba Water to comply with the YRDP license conditions, and to justify substantial upfront investments by Yuba Water for modifications to its generation facilities, the addition of the flood control outlet, and implementing PM&Es, including constructing and refurbishing recreation facilities and access roads thereto during the next license term.	Meets objective – 50-year license provides stability and predictability in YRDP hydropower operations	Meets objective – 50-year license provides stability and predictability in YRDP hydropower operation	May not meet objective – 50-year license provides stability and predictability in YRDP hydropower operations, but revenues would be significantly reduced.	Does not meet objective – no license would be issued for hydropower generation.
10. Consistent with state policies favoring water transfers stated in Water Code sections 109 and 475, continue to support statewide water supply reliability through continued Lower Yuba River Accord transfers to contractors of the CVP and the SWP, and potentially others, under the Lower Yuba River Accord Water Purchase Agreement.	Meets objective – would continue to support statewide water supply reliability through continued Lower Yuba River Accord transfers	Meets objective – would continue to support statewide water supply reliability through continued Lower Yuba River Accord transfers	Does not meet objective – streamflow requirements based on 55% of unimpaired flows would not continue to support statewide water supply reliability and would effectively terminate Lower Yuba River Accord transfers.	Meets objective – Yuba Water likely would continue to transfer water consistent with state policies.

Project Objective	Proposed Projects	Alternative 1	Alternative 2	No Project
Narrows Project Objectives				
1.Continue to support Yuba Water's coordinated operations of the Narrows Project with the YRDP to advance and implement Yuba Water's core flood-control and water-supply missions established by the Legislature in the Agency Act.	Meets objective – allows for coordination of Narrows operations with YRDP operations.	Meets objective – allows for coordination of Narrows operations with YRDP operations.	Meets objective – allows for coordination of Narrows operations with YRDP operations.	Meets objective – Yuba Water would continue its existing flood-control and water supply operations, though coordination would be more difficult without a FERC license.
2.Obtain a new FERC license for the Narrows Project to generate revenues to continue to fund operation and maintenance of the Narrows Project facilities as part of Yuba Water's flood-control and water-supply missions under the Agency Act.	Meets objective – allows sufficient revenues for continued O&M of Narrows facilities and of Yuba Water's flood control facilities.	Meets objective – allows sufficient revenues for continued O&M of Narrows facilities and of Yuba Water's flood control facilities.	May not meet objective – revenues would be reduced.	Does not meet objective - no license would be issued, revenues would be substantially reduced with no hydropower sales.
3.Continue to generate long-term, predictable revenue for Yuba Water's programs to support Yuba County's disadvantaged communities.	Meets objective – allows sufficient revenues to support Yuba Water's programs for disadvantaged communities.	Meets objective – allows sufficient revenues to support Yuba Water's programs for disadvantaged communities.	May not meet objective – revenues would be reduced.	Does not meet objective - no license would be issued, revenues would be substantially reduced with no hydropower sales.
4. Continue to generate long-term, predictable revenue for Yuba Water's fisheries and aquatic habitat enhancement projects on the lower Yuba River.	Meets objective – allows sufficient revenues to support Yuba Water's programs for fisheries and aquatic habitat projects.	Meets objective – allows sufficient revenues to support Yuba Water's programs for fisheries and aquatic habitat projects.	May not meet objective – revenues would be reduced.	Does not meet objective - no license would be issued, revenues would be substantially reduced with no hydropower sales.
5. Continue to support California's power requirements by providing renewable hydropower generation to meet resource diversity and capacity needs consistent with the Agency Act, CEC regulations and CAISO energy markets.	Meets objective – allows continued generation of electricity that meets California's requirements, including carbon-free electricity and emergency power requirements.	Meets objective – allows continued generation of electricity that meets California's requirements, including carbon-free electricity and emergency power requirements.	May not meet objective – allows continued generation of electricity, but at a reduced level.	Does not meet objective - no license would be issued for hydropower generation.

Project Objective	Proposed Projects	Alternative 1	Alternative 2	No Project
6.Obtain stability and predictability in long-term Narrows Project operations to generate funds to allow Yuba Water to comply with the Narrows Project license conditions.	Meets objective – allows sufficient revenues for continued O&M of Narrows facilities.	Meets objective – allows sufficient revenues for continued O&M of Narrows facilities	May not meet objective – revenues would be reduced.	Does not meet objective - no license would be issued, revenues would be substantially reduced with no hydropower sales.
7.Continue to provide stability and reliability in long-term YRDP and Narrows Project coordinated operations by obtaining a new FERC license for the Narrows Project that will run concurrently with the term of a new FERC license for the YRDP.	Meets objective – concurrent licensing would occur, allowing for coordination of Narrows operations with YRDP operations.	Meets objective – concurrent licensing would occur, allowing for coordination of Narrows operations with YRDP operations.	Meets objective – concurrent licensing would occur, allowing for coordination of Narrows operations with YRDP operations.	Does not meet objective – no license would be issued.

25.5.3 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6(e)(2) requires an EIR to identify an "environmentally superior alternative" to a proposed project. If the environmentally superior alternative is the No Project Alternative, then the EIR shall also identify an environmentally superior alternative among the other alternatives analyzed in the EIR.

As shown in Section 25.5.1 above, the No Project Alternative would avoid the environmental impacts associated with proposed YRDP construction activities and new YRDP facilities that would occur under the Proposed Projects and Alternatives 1 and 2. However, the No Project Alternative would have significant and unavoidable individual and cumulative impacts related to power production and greenhouse gas emissions due to the complete loss of hydropower generation that currently provides significant benefits to the region's and California's electrical grid. Moreover, the No Project Alternative would substantially reduce revenue from hydropower generation that Yuba Water currently relies on to fund various types of projects intended to provide long-term environmental benefits. Given the severity of these long-term impacts under the No Project Alternative, both in terms of their magnitude and their broad geographic scope, Yuba Water does not consider the No Project Alternative to be the environmentally superior alternative.

Alternatives 1 and 2 would include the same YRDP construction activities and non-flow YRDP and Narrows Project operations activities as the Proposed Projects, and would therefore have the same environmental impacts associated with those activities. As explained in Chapter 2, most of those activities would be required as conditions of the new YRDP and Narrows Project FERC licenses and have been incorporated into the proposed actions based on consultation between Yuba Water, FERC, other state and federal regulatory agencies, and stakeholders. The primary differences between the Proposed Projects and Alternatives 1 and 2 would be attributable to differences in flow-based operations.

As shown in Section 25.5.1, impacts related to flow-based operations would generally be similar under the Proposed Projects and Alternative 1, while Alternative 2, in comparison, would have more severe environmental impacts. As explained in Chapter 5, Surface Water Resources, and Chapter 6, Groundwater Resources, unlike the Proposed Projects or Alternative 1, Alternative 2 would result in more frequent and more severe surface water supply shortages that would lead to increased groundwater pumping such that groundwater levels would fall below local management levels. Additionally, as explained in Chapter 8, Surface Water Quality, Alternative 2 would substantially degrade water quality at New Bullards Bar Reservoir. Moreover, as explained in Chapter 7, Energy, and Chapter 15, Air Quality and Greenhouse Gas Emissions, Alternative 2 would result in significant losses in hydropower generation, which would in turn result in substantially higher indirect GHG emissions compared to the Proposed Projects and Alternative 1. Chapter 9, Fisheries Resources, identified significant and unavoidable adverse impacts on several fish species that would occur under Alternative 2, while no adverse impacts were identified under the Proposed Projects or Alternative 1. For these reasons, Alternative 2 is not the environmentally superior alternative.

As noted above, the Proposed Projects and Alternative 1 generally have similar impacts related to flow-based operations. As Alternative 1 includes changes to YB/DS operations upstream of the YRDP and Narrows Project, this EIR includes a programmatic analysis of potential impacts that could occur as a result of these non-Yuba Water operations. As shown in Section 25.5.1, while these impacts are unique to Alternative 1, they generally do not reflect substantially worse environmental conditions beyond what is reflected in the analysis of the direct impacts of the Proposed Projects and Alternative 1. Moreover, as explained in Chapter 3, Alternatives, Yuba Water specifically developed Alternative 1 to represent a strategy by which Yuba Water and upstream project operators could jointly and equitably allocate water to provide cooler water temperatures in the lower Yuba River for federally listed species protection from July through November. While Alternative 1's primary intended benefit is providing cooler water temperatures in the lower Yuba River for federally listed species protection, Alternative 1 also would improve conditions for the establishment of riparian vegetation, as well as assist in maintaining existing riparian vegetation. In addition, Alternative 1 would also improve fisheries resources in reaches upstream of Englebright Dam and benefit rainbow trout. Considering these environmental benefits that would occur under Alternative 1, and because the adverse environmental impacts of Alternative 1 would generally be similar to those under the Proposed Projects, Alternative 1 is the environmentally superior alternative.

25.6 Climate Change

25.6.1 Introduction

This section describes the process used by Yuba Water to investigate potential effects of climate change and how such climate change-related effects may potentially influence future YRDP and Narrows Project operations in the Yuba River Watershed under the Proposed Projects and alternatives.

CEQA primarily addresses climate change in the context of a project's contribution to global climate change through GHG emissions (e.g., Public Resources Code § 21083.05; CEQA Guidelines §§ 15064.4, 15126.4(c), 15183.5). As discussed in Chapter 15, Air Quality and

Greenhouse Gas Emissions, impacts of the Proposed Projects on GHG emissions would be less than significant with mitigation incorporated. While CEQA does not specifically require any further analysis of climate change; this section addresses whether the Proposed Projects and alternatives could exacerbate any adverse effects of climate change or whether project operations under climate change conditions would result in new or more severe impacts. As addressed in this analysis below, the Proposed Projects are not expected to exacerbate any climate change-related effects (e.g., flood potential), and reservoir releases and river flows associated with YRDP and Narrows Project operations under the Proposed Projects would generally remain within historical operating ranges.

Yuba Water has voluntarily chosen to prepare a sensitivity analysis to enable a more comprehensive understanding of the incremental changes in YRDP and Narrows Project operations under projected climate change conditions within the Yuba River Watershed, under both the Existing Condition and Future Baselines, for the Proposed Projects and alternative scenarios. This analysis primarily considers the facilities and activities over which Yuba Water holds operational control and sole or joint decision-making authority.

Analyzing how climate change is projected to influence the Project Area, and how the Proposed Projects and alternatives could affect those climate change influences, presents fundamentally different questions than those presented for the resource-specific analyses. Accordingly, the analysis in this section is organized differently from the resource-specific analyses in this DEIR. Section 25.6.2 provides background information. Section 25.6.3 explains the methodology for the climate change analysis in this DEIR. A description of existing climate conditions is provided in Section 25.6.4, Existing Climate in the Sacramento Valley Region of California. Section 25.6.5, Climate Change Trends and Projected Impacts, addresses recent trends, climate change projections, and expected climate impacts in California.

Section 25.6.6, Potential Climate Change Impacts on Operations of the Proposed Projects and Alternatives, analyzes whether either the YRDP or the Narrows Project operations effects would be expanded compared to baseline (existing) operations under climate change conditions. A summary of the results of this analysis is provided in Section 25.6.7, Summary of Climate Change Analysis Results. Finally, Section 25.6.8 summarizes the relative effect of climate change on the Proposed Projects and the alternatives under both the Existing Condition and the Future Baseline.

25.6.2 Background

Climate change[1] is characterized by a long-term change in the average weather patterns that have come to define the Earth's local, regional, and global climates, and these changes have a broad range of observed effects that are synonymous with the term (NASA 2025). Although the climate can change, and has changed, in the past in response to natural drivers, recent climate change has been more rapid than previous episodes of climate change and has been linked to increasing

[1] "Climate change" and "global warming" are often used interchangeably but have distinct meanings. Climate change generally refers to "*a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer*" (IPCC 2023). Global warming refers to "*the increase in global surface temperature relative to a baseline reference period, averaging over a period sufficient to remove interannual variations (e.g., 20 or 30 years)*" (IPCC 2023).

concentrations of GHGs in Earth's lower atmosphere and the rapid timescale on which these gases have accumulated (IPCC 2021, 2023).

Higher concentrations of heat-trapping GHGs in the atmosphere result in increasing global surface temperatures, a phenomenon commonly referred to as global warming. Higher atmospheric GHG concentrations and global surface temperatures in turn result in changes to the Earth's climate system, including rainfall patterns, extreme weather events, ocean temperature and acidity, the amount of spring snow cover in the Northern Hemisphere, atmospheric water content, and global sea-level rise (IPCC 2023). Some of the above changes will result in specific impacts at the state and local levels. Future climate change is projected to increase the severity of these impacts across natural and human systems and will increase regional differences (IPCC 2023).

Current knowledge on climate change, even with modern climate models, remains limited to large-scale effects. As California experiences more weather extremes due to climate change, planning for the future will be critical for the resilience of the state's water supply (DWR 2024a). In California and the Sierra Nevada, observed trends indicate a warming climate, but there is less certainty regarding changes in precipitation amounts and timing, storm intensity, and multi-year wet and dry cycles. However, using data from an analysis conducted by the DWR with global climate models, it is possible to examine potential climate effects and project operational changes under varying hydrologic conditions within the Yuba River Watershed at a basic level.

25.6.3 Methodology

Given the inherent complexity, uncertainty, and limitations of modeling climate change at a local scale, the analysis in this section focuses on relative changes in key physical parameters between the Existing Condition, Proposed Projects, and alternatives scenarios, considering projected climate change conditions. This analysis aims to determine if climate change-driven hydrological changes would give rise to meaningful differences in these key parameters between the Proposed Projects and alternatives. The analysis considered the following key parameters, which reflect fundamental characteristics of YRDP and Narrows Project operations:

- **Change in frequency of end-of-September New Bullards Bar storage greater than 650,000 acre-feet.** This metric is representative of full-year operations and is minimally influenced by day-to-day inflows.
- **Change in frequency of end-of-September New Bullards Bar storage lower than 400,000 acre-feet.** Reservoir storage levels below 400,000 acre-feet would indicate agricultural water supply shortages.
- **Change in frequency of New Bullards Bar Reservoir storage lower than 300,000 acre-feet.** Reservoir storage levels below 300,000 acre-feet would indicate limitations in the water available for Yuba Water to meet regulatory requirements and the likely absence of a cold-water pool.
- **Change in frequency of New Bullards Bar Reservoir reaching gross pool storage.** Reservoir storage levels reaching gross pool storage suggests the cold-water pool is at its maximum volume, and would allow for the greatest flexibility to provide ideal conditions

downstream for any resource. It also would indicate better storage conditions for the following year.

- **Change in occurrence of storage limited by top of conservation.**[2] This metric provides insight into what is limiting New Bullards Bar Reservoir from filling, and indicates a change in both inflows to New Bullards Bar Reservoir and the potential for flood releases; an increased frequency of reaching the top of conservation indicates an increased frequency of flood releases from New Bullards Bar Reservoir.
- **Change in occurrence of NYI year types.** The NYI is used to define the schedule of flow requirements on the lower Yuba River. Higher NYI Schedules indicate lower flow requirements. A shift towards higher index flow schedules would result from both a lower end-of-September storage and lower inflows, and thus a lower NYI.

If the differences between the Proposed Projects or alternatives and the applicable baseline substantially increase for one or more key parameters, then the relevant impacts associated with the YRDP and Narrows Project operations under the Proposed Projects or alternatives, could be greater under climate change conditions. Conversely, if the differences remain about the same, then the impacts associated with YRDP and Narrows Project operations under the Proposed Projects and Alternatives, compared to the basis of comparison, would likely be similar under climate change conditions and the detailed analysis of potential impacts is likely to be representative of the Proposed Projects' or Alternatives' impacts under climate change.

Recently, DWR published the *State Water Project Delivery Capability Report (DCR) 2023* (DWR 2024), which included CalSim 3 modeling representing several potential climate change conditions. Yuba Water's approach for the sensitivity analysis in this DEIR is based upon analyses completed by DWR (2024), which served as a basis for developing climate change hydrology for the Yuba River Watershed that is used to provide information about projected effects of climate change as related to the YRDP and the Narrows Project.

DWR's DCR update included substantially expanded climate change analysis and planning information to evaluate the effect of climate change on water supply delivery capability. This improved planning information included multiple scenarios of future climate conditions to help examine the resiliency of SWP water supply to changes in climate (DWR 2024b).

The 2023 DCR analyzed SWP water delivery capability under multiple risk-informed climate scenarios (50%, 75%, and 95% level-of-concern). DWR developed "level-of-concern" scenarios at specified climate-informed system performance levels[3]; for example, a 95% level-of-concern scenario depicts a future condition in which 95% of model-informed climate outcomes result in better SWP system reliability. The methods used to develop hydrologic data sets under climate changed conditions in the 2023 DCR were built on the work conducted for previous DCRs and other climate change analyses conducted by DWR and others. The hydrologic data sets for the

[2] Yuba Water's flood management operations at New Bullards Bar Reservoir are regulated by the USACE's (1972) Water Control Manual (WCM) to reduce potential downstream flood damages. The "top of conservation" represents the maximum allowable storage for subsequent re-regulation by Yuba Water and is defined within the WCM (USACE 1972).

[3] DWR (2024b) noted that the purpose of its climate studies was to evaluate the baseline risks and impacts of climate change. The three potential future climate change scenarios in the DCR only consider existing regulations, existing infrastructure, and current project operations. Although the DCR evaluated future climate conditions, it did not model potential future adaptation strategies (DWR 2024b).

climate changed conditions were selected by DWR to represent specific levels of change to unimpaired flow that stress SWP and CVP operations (DWR 2024b).

Yuba Water relied upon the 2023 DCR's modeling simulations representing climate change conditions as the basis for developing climate change hydrology for the Yuba River Watershed that was used to provide information about potential effects of climate change on the YRDP and the Narrows Project. Yuba Water's analysis is based on applying scaling factors to historical input hydrology for the YRDPM and Mini-Model (see Chapter 4, Framework for the Environmental Analysis) based on the 2023 DCR (DWR 2024b). Consistent with DWR's DCR approach, a 30-year period of record centered on 2043 (2028 through 2057) was used for model-related applications used in the discussion of climate change trends because it represents the nearest available climate projections.

Yuba Water used climate change and historical inflows for the Yuba River Watershed from CalSim 3 to adjust the YRDPM input hydrology. Yuba Water selected 50% and 95% exceedance probability distributions to frame the potential range of effects that may be expected under a future climate scenario. Results of a 75% exceedance probability distribution would be expected to fall between those of the 50% and 95% exceedance probabilities and therefore would not provide any additional insight into the range of potential effects of climate change in the Yuba River Watershed. Using this approach, Yuba Water evaluated changes in the key parameters listed above. Yuba Water's detailed methodology is presented in Appendix 5E.

Due to the increasing uncertainty and limitations in hydrologic development, it is challenging to evaluate model results based on climate change hydrology. This makes it difficult to draw conclusions about the potential effects of climate change on various environmental resources, unlike the more straightforward comparisons possible with historical hydrology. Accordingly, Yuba Water's evaluation of potential effects of climate change considers general high-level trends and systematic changes, then qualitatively discusses the likely implications of those changes for various resource areas, such as water supply and fisheries. A statistical analysis for detailed impact analysis would imply an unsupportable level of confidence or accuracy in the modeling.

As described above, if the differences between the Proposed Projects or alternatives and the applicable baseline increase substantially for one or more key parameters, then the relevant impacts associated with the YRDP or Narrows Project operations under the Proposed Projects or Alternatives could be greater under climate change conditions. Conversely, if the differences remain about the same, then the impacts associated with YRDP and Narrows Project operations under the Proposed Projects and Alternatives, compared to the basis of comparison, would likely be similar under climate change conditions and the detailed analysis of potential impacts is likely to be representative of the Proposed Projects' or Alternatives' impacts under climate change. Therefore, the analysis of potential hydrologic impacts presented in Appendix 5E is assumed to be representative of the types of potential impacts that could result from the Proposed Projects or an alternative in the future under changed conditions associated with climate change.

25.6.4 Existing Climate in the Sacramento Valley Region of California

The Sacramento Valley is considered to have a Mediterranean climate characterized by hot, dry summers and cool, wet winters, with most precipitation falling during the months from November

through April. The Sacramento Valley region receives less precipitation than coastal regions to the west and mountains to the east due to the topography of the mountains. The Sacramento Valley also experiences greater temperature extremes than its surroundings, and average air temperatures in the mountainous regions of the watershed are typically 5 to 10°F lower than the temperature on the valley floor (DWR 2022).

Although the snow lines vary by storm event, portions of the Sacramento Valley watershed are above the snow line. Consequently, much of the respective runoff through the Sacramento Valley and into the Delta is from snowmelt. Snow in higher elevations serves as an effective type of natural storage because typically it melts gradually during the spring and summer, historically providing consistent flow into the Delta during these driest months of the year (DWR 2022).

Annual precipitation in the Sacramento Valley ranges from 80 to 90 inches of primarily snowfall in the mountainous regions, to 41 inches of rain in Redding and 19 inches Sacramento (DWR 2022). Average annual precipitation for the entire watershed is approximately 36 inches. Most precipitation occurs between November and April, with little or no precipitation falling between May and October. Factors such as spring temperatures and the nature of precipitation (i.e., rain/snow elevations in storms) during the October to April period play an important role in runoff timing (DWR 2022). The Sacramento Valley historically has been affected by periodic extreme precipitation events. The majority of these historical events have likely been caused by atmospheric phenomena called atmospheric rivers (Dettinger 2011), which are narrow corridors of water vapor transported in the lower atmosphere that traverse long swaths of Earth's surface (Ralph and Dettinger 2011). These storms can deliver large amounts of precipitation to California in a short period of time. In addition, these storms tend to be warm, originating in the tropics. This results in higher snow lines and larger portions of the watershed contributing to direct runoff.

The Yuba and Feather River watersheds receive 80 to 90% of their annual rainfall from November through April. Heavy rains and snowfall at higher elevations, usually above 5,000 ft, result from large-scale, multiday storms flowing west to east from the Pacific Ocean, mostly in the form of atmospheric rivers. Mean annual precipitation in the Yuba River Watershed is 80 inches in the upper watershed and 20 inches in the lower watershed. Mean annual precipitation in the Feather River Watershed ranges from 70 inches on the western slopes to 12 inches on the arid eastern slide. The Yuba and Feather River watersheds are among the most productive watersheds in the state in terms of overall runoff (Ralph et al. 2022).

25.6.5 Climate Change Trends and General Projected Impacts

The scientific basis for understanding the processes and sources of climate variability has grown significantly in recent years, and our ability to forecast human and natural contributions to climate change has improved (DWR et al. 2020). Climate change is altering a variety of water resources, and these changes include rising global average surface temperatures, rising ocean temperatures, changes in precipitation patterns, changes in ocean salinity, ocean acidification, glacier shrinking, decreased Arctic sea-ice extent, rising global sea levels, and increased intensity and frequency of extreme events such as heat waves and heavy precipitation events (IPCC 2021; DWR et al. 2020).

In recent years, many studies on climate change impacts have been conducted by the Intergovernmental Panel on Climate Change (IPCC), the U.S. Global Change Research Program

(USGCRP), the Governor's Office of Planning and Research (OPR), the California Energy Commission (CEC), the California Natural Resources Agency (CNRA), agencies in the State of California (e.g., DWR) and Reclamation. Established by the United Nations Environment Programme and the World Meteorological Organization in 1988, the IPCC provides the world with a clear scientific view of the current state of knowledge regarding climate change and its potential environmental and socioeconomic impacts. The IPCC is viewed by governments, policymakers, and scientists as the leading international body on the science of climate change, and its summaries of climate changes at the global and super-regional scales are considered the best available science. The IPCC is currently in its seventh assessment cycle. The latest report – the *Sixth Assessment Report* includes three parts: (1) *Climate Change 2021: The Physical Science Basis* (IPCC 2021); (2) *Climate Change 2022: Impacts, Adaptation and Vulnerability* (IPCC 2022a); and (3) *Climate Change 2022: Mitigation of Climate Change* (IPCC 2022b) as well as a synthesis report (IPCC 2023) that is cited herein (along with various special reports). Other particularly relevant studies to the Sacramento Valley include the Delta Stewardship Council's report, Delta Adapts: Creating a Climate Resilient Future (Delta Stewardship Council 2024), DWR's vulnerability assessment in the Climate Action Plan Phase III: Climate Change Adaptation Plan (DWR 2020) and DWR's State Water Project Delivery Capability Report 2023 (DWR 2024b), which includes CalSim 3 modeling representing several potential climate change conditions.

25.6.5.1 Climate Change Trends in California

The impacts from a changing climate are already evident in California (Barnett et al. 2008), and these impacts have the potential to significantly alter aquatic habitats over the upcoming decades. The San Francisco Bay Area's average annual maximum temperature has increased by 1.7°F from 1950-2005, and sea level in the Bay Area has risen over 8 inches in the last 100 years (Ackerly et al. 2019). Temperatures over the Sierra Nevada have increased during the last 100 years, resulting in less snowfall, more rainfall, and an earlier snowmelt (Moser et al. 2009). Figure 25.6-1 shows this warming to date in California. Nighttime temperatures are rising across California and at a higher rate than day-time temperatures (DWR and Reclamation 2016). Furthermore, daytime and nighttime heat wave events throughout California have increased in intensity, particularly the nighttime component (Moser et al. 2009).

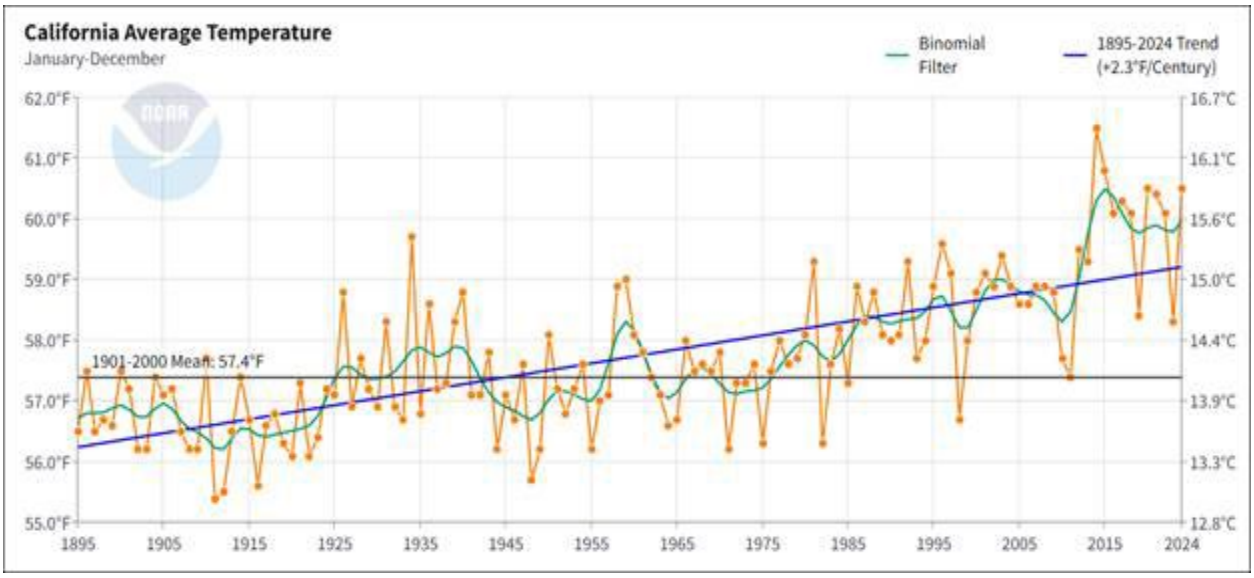

Figure 25.6-1. Increase in average annual temperature in California. Source: NOAA (2025).

While much variation exists in projections related to future precipitation patterns, available climate models predict a warming trend resulting from the influence of rising levels of GHGs in the atmosphere (Barnett et al. 2005). The potential effects of a warmer climate on the seasonality of runoff from snowmelt in the Central Valley have been well-studied and results suggest that melt runoff will likely shift from spring and summer to earlier periods in the water year (Vanrheenen et al. 2001). Snow accumulation in the Sierra Nevada acts as a natural reservoir for California by delaying runoff from winter months when precipitation is high (Kiparsky and Gleick 2003). Research also shows that warming since the preindustrial era is responsible for reducing average snowpack by about 25% in the Sierra Nevada (Berg and Hall 2017). While average precipitation may not change significantly, there will be a change in precipitation patterns and extremes. On the wet extreme, the Sacramento Valley will likely see rainier winter storms, more extreme floods, and greater floodplain vulnerability (Swain et al. 2018). On the dry extreme, the region will see increased dryness in Dry Water Years and more extreme droughts. Precipitation whiplash, which is an abrupt transition from one extreme to another, may also increase by 25% in northern California (Houlton and Lund 2018).

Precipitation timing and its effect on snowpack also have implications for water management in California, particularly the Sacramento Valley. The northern Sierra Nevada, which provides the primary source for water in the region, could see more years with low snowpack. Precipitation may also fall more often as rain rather than snow due to higher temperatures, which may shift timing of streamflow into the region from spring to winter, affecting inputs into rivers and reservoirs (Houlton and Lund 2018). Studies suggest that the spring stream flow maximum could occur about one month earlier by 2050 (Barnett et al. 2005). Earlier spring conditions, wetter winters, and drier summers will continue to contribute to increased large summer and fall wildfires (State of California 2025).

25.6.6 Potential Climate Change Impacts on Operations of the Proposed Projects and Alternatives

To investigate whether the YRDP or the Narrows Project operations could be affected due to climate change, Yuba Water evaluated the potential influence of climate change on the Proposed Projects and the alternatives. Modeling results demonstrate that there is minimal distinction between the exceedance scenarios (50% and 95%) other than changes in magnitude of effect. A review of the high-level metric results shown in Appendix 5E supports several conclusions[4] about the anticipated potential effects of climate change on the Yuba River Watershed, which are discussed below. The No Project Alternative is not included in the tables; for purposes of this analysis, the No Project Alternative is assumed to be operationally the same as the Existing Condition as discussed in Section 5.5.1.7 in Chapter 5, Surface Water Resources, and its response to climate change would be the same as the Existing Condition.

25.6.6.1 Change in Frequency of New Bullards Bar Reservoir End-of-September Storage Greater than 650,000 Acre-Feet

Yuba Water manages storage in New Bullards Bar Reservoir to reach an end-of-September storage of 650,000 ac-ft, unless operations to meet flow requirements result in a storage lower than 650,000 ac-ft. End-of-September storage is a good high-level metric for evaluating the effects of climate change because it is representative of full-year operations and is minimally influenced by day-to-day inflows. Table 25.6-2 shows a comparison of the frequency of New Bullards Bar Reservoir end-of-September storage reaching 650,000 acre-feet for the Existing Condition, the Future Baseline, the Proposed Projects, and alternatives under historical hydrology and the two climate change exceedance scenarios (50% and 95%).

Table 25.6-2. Comparison of the Frequency of a Simulated New Bullards Bar Reservoir End-of-September Storage Reaching 650,000 Acre-Feet.

Scenario	Historical Hydrology (Number of Years)	50% Exceedance Climate Change (Number of Years)	95% Exceedance Climate Change (Number of Years)
Existing Condition	30	12	9
Future Baseline	32	13	10
Proposed Projects (existing)	26	11	7
Proposed Projects (future)	28	11	9
Alternative 1	25	11	10
Alternative 2	13	13	12

Modeling indicates that climate change will reduce the frequency of end-of-September storage reaching 650,000 acre-feet, relative to historical hydrology. However, climate change affects the scenarios similarly; the frequency of 650,000 acre-feet at the end of September is similarly reduced for each scenario with the exception of Alternative 2. Alternative 2 results in a much lower frequency of an end-of-September storage of 650,000 acre-feet under historical hydrology, but the

[4] Because uncertainty exists in each step of the climate change hydrology development process, and each step builds upon previous steps, there is substantial compounded uncertainty in the resultant hydrological inputs that were used for this analysis. Thus, a more rigorous application of climate-related model results is not justified based on the limitations associated with currently-available information and the compounded factors of uncertainty that are embedded within the characterization of climate change hydrology.

storage constraints included as part of the scenario result in similar frequencies of storage under climate change. These storage constraints, which require a carryover storage (September 30th storage) of 600,000 acre-ft in most years that is a regulatory requirement in this alternative, results in much greater water supply delivery shortages to maintain storage levels, trading storage reductions for water supply reductions. Therefore, it is not a reasonable interpretation of these results to suggest Alternative 2 provides greater protection of storage in New Bullards Bar Reservoir.

25.6.6.2 Change in Frequency of New Bullards Bar Reservoir End-of-September Storage Lower than 400,000 Acre-Feet

Yuba Water manages water supply deliveries to its Member Units to maintain storage in New Bullards Bar Reservoir above 400,000 acre-feet at the end of September. An end-of-September reservoir storage of 400,000 acre-feet or below is indicative of agricultural water supply shortages, and an increase in the frequency of reaching reservoir storage levels of 400,000 acre-feet or lower would indicate an increased frequency of shortages. Table 25.6-3 shows a comparison of the percentage of years the New Bullards Bar Reservoir end-of-September storage would be 400,000 acre-feet or below for the Existing Condition, the Future Baseline, the Proposed Projects, and alternatives under historical hydrology and the two climate change exceedance scenarios (50% and 95%).

Table 25.6-3. Comparison of the Frequency of a Simulated New Bullards Bar Reservoir End-of-September Storage Lower than 400,000 Acre-Feet.

Scenario	Historical Hydrology (Number of Years)	50% Exceedance Climate Change (Number of Years)	95% Exceedance Climate Change (Number of Years)
Existing Condition	3	6	8
Future Baseline	3	6	7
Proposed Projects (existing)	4	6	8
Proposed Projects (future)	3	6	8
Alternative 1	3	7	8
Alternative 2	2	1	2

Climate change will increase the frequency of a New Bullards Bar Reservoir end-of-September storage less than or equal to 400,000 acre-feet, implying an increased frequency of agricultural water supply shortages relative to historical hydrology. However, the increased frequency of water supply shortages under climate change compared to historical hydrology is generally consistent for the Proposed Projects and Alternative 1 under the Existing Condition and the Future Baseline. As described in Section 5.5.1.6 of Chapter 5, while other scenarios limit agricultural water supply shortages to 50% of annual demand, Alternative 2 assumes shortages can be as high as 100% of demand; while end-of-September storage is below 400,000 acre-feet less frequently under Alternative 2, the increased storage is due to greater shortages in water supply. Accordingly, it is not a reasonable interpretation of these results to suggest Alternative 2 provides greater protection of storage in New Bullards Bar Reservoir.

25.6.6.3 Change in Frequency of New Bullards Bar Reservoir Storage Below 300,000 Acre-Feet

While not minimum pool, a New Bullards Bar Reservoir storage of 300,000 acre-feet, corresponding to an elevation of approximately 1,765 ft, represents a threshold of concern that, below which, Yuba Water would essentially be in an inflow-outflow mode and there would be little water available for meeting regulatory requirements. Based on historical monitoring, depending on time of the year there would likely be no cold-water pool (storage of water colder than 54°F) in New Bullards Bar Reservoir under these conditions. Table 25.6-4 shows a comparison of the number of years when New Bullards Bar Reservoir storage could reach 300,000 acre-feet of storage at some point in the year for the Existing Condition, the Future Baseline, the Proposed Projects, and alternatives under historical hydrology and the two climate change exceedance scenarios (50% and 95%).

Table 25.6-4. Comparison of the Frequency of Simulated New Bullards Bar Reservoir Storage Less than 300,000 Acre-Feet (Year-round).

Scenario	Historical Hydrology (Number of Years)	50% Exceedance Climate Change (Number of Years)	95% Exceedance Climate Change (Number of Years)
Existing Condition	2	2	4
Future Baseline	1	2	3
Proposed Projects (existing)	2	2	5
Proposed Projects (future)	1	2	2
Alternative 1	0	2	2
Alternative 2	2	2	3

Modeling indicates climate change will increase the frequency of very low storage for each scenario relative to historical hydrology. However, the frequency of low storage for the Proposed Projects and Alternative 1, relative to the Existing Condition, is similar under each climate condition. Alternative 2 includes greater volumes of shortages to maintain storage at similar levels: it is not a reasonable interpretation of these results to suggest Alternative 2 provides greater protection of storage in New Bullards Bar Reservoir.

25.6.6.4 Change in Frequency of New Bullards Bar Reservoir Reaching Gross Pool Storage

New Bullards Bar Reservoir has historically filled, or come very close to filling, between a third and a half of all years. While not quite a maximum pool of 956,000 acre-feet, a threshold of 950,000 acre-feet is a good surrogate that allows for some model discretion limiting New Bullards Bar Reservoir from reaching the absolute maximum storage. Filling New Bullards Bar Reservoir implies developing the cold-water pool to its maximum volume, and would allow for the greatest flexibility to provide ideal conditions downstream for any resource. It also implies the potential to provide better storage conditions for the following year. Table 25.6-5 shows a comparison of the number of years the New Bullards Bar Reservoir reaches 950,000 acre-feet of storage at some point in the year for the Existing Condition, the Future Baseline, the Proposed Projects, and alternatives under historical hydrology and the two climate change exceedance scenarios (50% and 95%).

Table 25.6-5. Comparison of the Frequency of Simulated Storage Exceeding 950,000 Acre-Feet at Any Time.

Scenario	Historical Hydrology (Number of Years)	50% Exceedance Climate Change (Number of Years)	95% Exceedance Climate Change (Number of Years)
Existing Condition	19	6	5
Future Baseline	19	6	6
Proposed Projects (existing)	18	4	3
Proposed Projects (future)	18	4	4
Alternative 1	18	4	4
Alternative 2	10	4	4

Under climate change, New Bullards Bar Reservoir will fill less often than under historical hydrology for all scenarios due to the earlier runoff previously described. Both climate change scenarios have a relatively consistent effect on the Proposed Projects and alternatives, relative to Existing Condition. There are several years under which the reservoir will fill under all alternatives under climate change, regardless of simulated operations; while Alternative 2 fills in fewer years under historical hydrology, it fills similarly to other scenarios in a handful of years.

25.6.6.5 Change in Occurrence of Storage Limited by Top of Conservation

Operations of New Bullards Bar Reservoir to reduce potential downstream flood damages are regulated by the USACE's (1972) WCM. The top of conservation represents the maximum allowable storage for subsequent re-regulation by Yuba Water and is defined within the WCM. New Bullards Bar Reservoir storage reaching the top of conservation within a season provides insight into what is limiting New Bullards Bar Reservoir from filling, and is indicative of a change in both inflows to New Bullards Bar Reservoir and the potential for flood releases; an increased frequency of reaching the top of conservation implies an increased frequency of flood releases from New Bullards Bar Reservoir. Table 25.6-6 shows a comparison of the number of years New Bullards Bar Reservoir reaches the top of conservation in each season for the Existing Condition, the Future Baseline, the Proposed Projects, and alternatives under historical hydrology and the two climate change exceedance scenarios (50% and 95%).

Table 25.6-6. Comparison of Frequency of New Bullards Bar Storage Limited by the Top of Conservation, by Season.

Scenario	Hydrology	Years Storage Limited by Top of Conservation			
		Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep
Existing Condition	Historical	6	44	31	4
	50% Exceedance	6	53	20	0
	95% Exceedance	6	53	19	0
Future Baseline	Historical	6	44	31	4
	50% Exceedance	6	53	20	0
	95% Exceedance	7	53	19	0
Proposed Projects (exiting)	Historical	4	44	28	1
	50% Exceedance	5	53	19	0
	95% Exceedance	6	52	18	0
Proposed Projects (future)	Historical	4	44	28	1
	50% Exceedance	5	53	19	0
	95% Exceedance	6	53	18	0
Alternative 1	Historical	4	44	28	1

Scenario	Hydrology	Years Storage Limited by Top of Conservation			
		Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep
	50% Exceedance	6	53	19	0
	95% Exceedance	6	53	18	0
Alternative 2	Historical	4	34	17	1
	50% Exceedance	7	53	19	0
	95% Exceedance	7	53	18	0

Under climate change, New Bullards Bar Reservoir will reach the top of conservation more often than under historical hydrology for all scenarios in the January-March period and fewer times in the April-June period due to the earlier runoff previously described. Both the 50% and 95% climate change scenarios have a relatively consistent effect on the Proposed Projects and both alternatives, relative to the Existing Condition.

25.6.6.6 Change in Occurrence of North Yuba Index Year Types

The NYI is based on the previous end-of-September storage and forecasted New Bullards Bar Reservoir inflow (YCWA et al. 2007). The NYI is used to define the schedule of flow requirements on the lower Yuba River. Higher NYI Schedules imply lower flow requirements. Schedule 1 has the highest required flows and Conference Years have the lowest. A shift towards higher index flow schedules would result from both a lower end-of-September storage and lower inflows, and thus a lower NYI. Table 25.5-7 shows a comparison of the percentage of years for each NYI Schedules for the Existing Condition, the Proposed Projects, and alternatives under historical hydrology and the two climate change exceedance scenarios (50% and 95%).

Table 25.5-7. Comparison of Frequency of Final North Yuba Index Schedules.

Scenario	Hydrology	NYI Schedule						
		1	2	3	4	5	6	Conf
Existing Condition	Historical	62%	21%	6%	2%	6%	2%	2%
	50% Exceedance	62%	15%	4%	4%	10%	4%	2%
	95% Exceedance	62%	10%	10%	2%	6%	10%	2%
Future Baseline	Historical	62%	21%	6%	2%	6%	2%	2%
	50% Exceedance	58%	17%	4%	6%	10%	4%	2%
	95% Exceedance	42%	21%	4%	8%	12%	10%	4%
Proposed Projects (existing)	Historical	58%	23%	8%	2%	6%	2%	2%
	50% Exceedance	62%	13%	6%	2%	10%	6%	2%
	95% Exceedance	58%	13%	8%	4%	6%	8%	4%
Proposed Projects (future)	Historical	60%	23%	6%	2%	6%	2%	2%
	50% Exceedance	62%	13%	6%	2%	10%	6%	2%
	95% Exceedance	58%	13%	8%	4%	8%	6%	4%
Alternative 1	Historical	60%	23%	6%	2%	6%	2%	2%
	50% Exceedance	62%	15%	4%	2%	10%	6%	2%
	95% Exceedance	58%	13%	10%	2%	8%	8%	2%
Alternative 2	Historical	56%	19%	8%	4%	8%	4%	2%
	50% Exceedance	62%	17%	4%	6%	6%	4%	2%
	95% Exceedance	58%	19%	6%	4%	6%	6%	2%

Yuba Water's modeling demonstrates that there is a shift towards higher NYI schedules in the future due to climate change, relative to historical hydrology. These results suggest that there also would be increased frequencies of lower flow requirements under the climate change scenarios.

However, the shift towards higher NYI schedules under climate change compared to historical hydrology is generally consistent for the Proposed Projects and both alternatives as the Existing Condition.

25.6.7 Summary of Climate Change Analysis Results

25.6.7.1 Reduced New Bullards Bar Reservoir Storage

Both climate change scenarios (50% and 95%) indicate that New Bullards Bar Reservoir will fill substantially less often under all scenarios relative to historical hydrology. Similarly, there are fewer periods when New Bullards Bar Reservoir end-of-September storage will be at 650,000 acre-feet and more periods when storage drops below 300,000 acre-feet at some point in the year. This reduced storage is primarily a result of the earlier runoff and an inability of New Bullards Bar Reservoir to capture the runoff; there is an increase in frequency of New Bullards Bar Reservoir storage being limited by the top of conservation in the winter under climate change, relative to historical hydrology.

25.6.7.2 Increased Flows during Winter

Flows during the winter months throughout the Project Area will likely be higher due to earlier snowmelt and more precipitation falling as rain instead of snow. Above Englebright Reservoir, there will likely be more spills at diversion dams. New Bullards Bar Reservoir storage is expected to be limited by the top of conservation more frequently in the winter, leading to a higher frequency of spills.

25.6.7.3 Reduced Flows during Spring and Summer

With lower New Bullards Bar Reservoir storage, the NYI will be lower resulting in higher flow schedules and the associated lower minimum flow requirements in the lower Yuba River. Additionally, the expected increase in water supply shortages will result in reduced flows between Englebright Dam and Daguerre Point Dam. When coupled with the reduced frequency of an end-of-September storage of 650,000 acre-feet, there will be more years when spring and summer operations are driven by minimum flow requirements and fewer years when releases are driven by storage management.

Above Englebright Reservoir, decreased spring and summer inflows under climate change will result in reduced flows below diversion dams; releases will be for full inflows earlier in the year and for longer than under historical hydrology.

25.6.7.4 Similar Flows during Fall

Fall flows are typically driven by minimum flow requirements, and requirements are similar between flow schedules. Therefore, climate change is not expected to notably affect fall flows.

25.6.7.5 Increased Summer and Fall Water Temperatures in the Lower Yuba River

With the reduction in New Bullards Bar Reservoir storage at the end of spring as a result of climate change, the volume of cold water within the reservoir is expected to be smaller than under

historical hydrology. When coupled with lower summer flows, it is reasonable to assume water temperatures throughout the Project Area would be warmer under climate change scenarios than under historical hydrology.

25.6.8 Relative Effect of Climate Change on Proposed Projects and Alternatives under Existing Condition and Future Baseline

While climate change is expected to affect YRDP and Narrows Project operations relative to historical hydrology, high-level model results indicate that these effects would be similar for the Proposed Projects, Alternatives, and bases of comparison. For example, there are four fewer years with an end-of-September storage of 650,000 acre-feet under the Proposed Projects relative to Existing Conditions under Historical Hydrology, and there are expected to be one to two years fewer under climate change; thus the trend of reduced frequency of an end-of-September storage of 650,000 acre-feet is generally maintained. Similar trends are observable across all high-level metrics. As a result, climate change would not be expected to substantially or meaningfully change impact conclusions developed based on detailed analysis under historical hydrology.

25.7 Climate Change Resiliency and Adaptation Benefits

Under AB 2800, state agencies must consider the current and future impacts of climate change, including the economic damages and financial liabilities associated with those impacts, when planning, designing, building, operating, maintaining, and investing in state infrastructure (Public Resources Code §71155). The California Climate Adaptation Strategy, mandated by AB 1482, is intended to help the state prepare for and address climate change impacts through a coordinated, integrated approach to building climate resilience. The Proposed Projects, and several other Yuba Water initiatives that are funded by hydropower revenues from the Proposed Projects, support many of the climate adaptation needs articulated in the Water Resilience Portfolio 2020 (DWR et al. 2020) and the California Climate Adaptation Strategy (CNRA 2024) to address climate vulnerabilities related to environmental resources such as water, energy, agriculture, biodiversity and habitat, among others.

The Proposed Projects, and several other Yuba Water initiatives that are funded by hydropower revenues from the Proposed Projects, are helping to address the climate adaptation strategies identified by the Yuba County IRWMP that are applicable to the following: (1) flood risk reduction; (2) water resources management; (3) water quality; and (4) protection of aquatic and biological resources. The full suite of potential strategies may be found in Table 11-4 of Yuba County IRWM RWMG (2018).

As part of the YRDP Proposed Project, Yuba Water implements the Yuba Accord, which includes three separate but interrelated agreements that protect and enhance fisheries resources in the lower Yuba River, increase local water supply reliability, and provide Reclamation and DWR with increased operational flexibility for protection of Delta fisheries resources, and provision of supplemental dry-year water supplies to state and federal water contractors.

Regionally, the Yuba County 2030 General Plan Update EIR states that climate change is expected to result in a variety of effects that could potentially impact Yuba County. The 2018 Update to the

Yuba County IRWMP also identified a range of potential adaptation strategies to reduce climate-related impacts and increase regional climate resiliency.

25.7.1 Flood Risk Reduction

Continued operation of the YRDP under a new license would support the flood-related climate adaptation strategies described above. For example, YRDP operations involving the ARC Spillway, once constructed and which would be operated conjunctively with the existing Primary Spillway at New Bullards Bar Dam, will enable Yuba Water to efficiently release flows downstream, including earlier passage of flows during large storm events. Inclusion of the ARC Spillway as part of the new FERC license for the YRDP would provide enhanced flood protection to the Yuba Region over the proposed 50-year duration of the new license.

Since 2019, Yuba Water and DWR have been working with USACE and others to implement Forecast Informed Reservoir Operations (FIRO) at New Bullards Bar Dam as part of an ongoing WCM update. FIRO is a flexible water management strategy that uses improved weather and runoff forecasts to help water managers retain or release water from reservoirs to increase resilience to droughts and floods. Although the primary objective of the FIRO effort is to reduce flood risk, a secondary objective is to achieve water supply benefits while supporting environmental needs (Ralph et al. 2022). USACE is working with Yuba Water and DWR to develop a more flexible operational regime that is: (1) based on updated observed conditions and improved technological and scientific capabilities; and (2) better informs decisions to retain or release water by integrating additional flexibility in operation policies and rules with enhanced monitoring and improved weather and hydrological forecasts. By incorporating FIRO into the WCM Updates, USACE aims to improve flood risk management, modernize reservoir operations, and increase water conservation while considering resilience to climate change (USACE 2025). USACE anticipates that a draft New Bullards Bar WCM Update and a draft NEPA document will be available in December 2025.

25.7.2 Surface Water Management

Climate adaptation actions identified in CNRA (2024) and the Yuba County IRWM (RWMG 2018) to address water-related vulnerabilities pertain to: (1) reduced water supply reliability; (2) reservoir storage level declines during the summer months; (3) helping regions improve preparation for drought; and (4) supporting agricultural water suppliers in developing drought plans and examining drought resilience and response planning.

Adaptive strategies for surface water management currently in place by Yuba Water include:

- Employing locally cost-effective efficient water management practices to achieve water use efficiency improvements of irrigation facilities.
- Conjunctive use of surface and groundwater, water transfers (artificial recharge), wastewater recycling, and irrigation water re-use.

The Yuba Accord includes a specific set of flow schedules[5] ranging from very wet to very dry conditions based on the NYI, a hydrologic index that was developed as part of the Yuba Accord that serves as an indicator of the amount of water available in the North Yuba River at New Bullards Bar Reservoir. The NYI includes consideration of New Bullards Bar Reservoir storage forecasted inflow, so climate variability is inherently built into the Yuba Accord; to the extent that climate change might be relevant, it would only be because changes in hydrology might affect the minimum streamflow requirements (i.e., flow schedule) that Yuba Water needs to implement during a given year.

Under the Yuba Accord, integration of Yuba County's groundwater and surface water supplies increases operational flexibility, and this integration assures a supplemental dry year supply of groundwater to irrigate local farmland. New Bullards Bar Reservoir carry-over storage is used to make up the difference between the available surface water supply and system demands (diversion demands, instream flow requirements, and system operational losses) under dry conditions.

Another adaptive strategy related to water management and drought protection included as part of Yuba Water's YRDP Proposed Project is the Drought Management Plan (Appendix 2B-4). Originally included in Yuba Water's 2017 AFLA for the protection of USFS resources (and subsequently adopted as a USFS 4(e) mandatory condition (Condition 53)), the purpose of the Drought Management Plan is to facilitate approval of variances to FERC license conditions so that drought management measures that require a variance to license conditions may be implemented in a timely, efficient and effective manner (YCWA 2017). FERC staff-recommended revisions to Yuba Water's Drought Management Plan would require Yuba Water to define drought conditions based on available data specific to the project, rather than regional or state-wide proclamations, to ensure modifications to operations during extended low-water periods are only implemented as necessary and in a manner that would be more protective of aquatic resources.

25.7.3 Groundwater Management and Agriculture

Climate adaptation actions identified in CNRA (2024) and the Yuba County IRWM (RWMG 2018) to address groundwater vulnerabilities are related to: (1) climate-related surface water reductions that could increase future groundwater demands and out-of-area transfer demands; (2) increased frequency of groundwater transfers within the context of a finite water supply; and (3) the need for improving water quality by reducing excess nutrients in groundwater. Climate adaptation actions also are identified for: (1) protecting agricultural lands from development and providing technology, tools, and resources necessary to maintain the economic viability, resiliency, and biodiversity; and (2) supporting climate resilience in the agricultural sector that build resilience to extreme heat.

Adaptive strategies for groundwater management currently in place include:

- Implementation of basin management objectives outlined in the Groundwater Sustainability Plan for the Yuba Subbasins (Cordua Irrigation District et al. 2024), which was recently approved by Yuba Water's Board of Directors on January 7, 2025.

[5] FERC staff (2019) recommended that Yuba Water modify the minimum flow schedule for schedule 6 water years to include flows of 350 cfs from June 1 through August 31.

- Groundwater monitoring is currently being conducted by Yuba Water under its groundwater monitoring plan.
- Yuba Water's Groundwater Adaptive Management Tool helps model groundwater response and recovery throughout the Yuba Basin.

In 2014, the State of California enacted SGMA to provide local and regional agencies with the authority to sustainably manage groundwater. SGMA required the preparation of a GSP for medium- or high-priority basins/subbasins to reach sustainability within 20 years of implementing their sustainability plans. The Yuba Subbasin GSP concluded that no projects or management actions are required to achieve sustainability, because the Yuba Subbasins are sustainable under historical, current, and projected conditions, including incorporating the effects of climate change. However, even with the existing sustainable conditions, the GSP includes projects and management actions to assist in enhancing management capability and improve the understanding of the groundwater system considering potential climate change (YCWA 2019).

25.7.4 Energy

Climate adaptation actions identified in CNRA (2024) and the Yuba County IRWM (RWMG 2018) are related to the need for resilience of critical, climate vulnerable energy infrastructure. The Yuba County IRWM (2018) forecasts that climate impacts on high-elevation hydropower production will likely have wide-ranging effects. The Yuba County IRWM (2018) further predicts that, because future hydropower generation losses are probable (along with hydropower-related revenue losses), decreases in hydropower production coupled with increased summer energy demands could affect the local economy. Consequently, climate adaptation is expected to require a combination of operating changes to hydrogeneration facilities, with secondary impacts to water facilities and delivery (RWMG 2018).

Many of the climate vulnerabilities described above are reduced or offset by the various project features and facilities that are part of the Proposed Projects, particularly those of the YRDP. Continued operation of the YRDP under a new license would provide a dependable source of electrical energy for the region - 1,374,003 MWh annually - and the 361.9 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution, including greenhouse gases.

Additionally, the YRDP and Narrows Projects are used for a combination of peaking[6], ancillary services, and baseload generation. Under current operations, the New Colgate Powerhouse may operate for more, fewer, or irregular hours on any given day in response to power market demands, with the total water throughput on a weekly basis necessary to maintain minimum flow requirements as the only constraint on operations. Depending on energy demand, the New Colgate Powerhouse generation can ramp up (or down) from a minimum of 1 MW with only one unit operating to the nameplate capacity of 315 MW with both units operating in less than 10 minutes. The ability to rapidly fluctuate generation, together with substantial storage available in New Bullards Bar Reservoir, makes the project unique to Northern California and important to grid stability (FERC 2019), particularly with projected climate change.

[6] Generation that occurs during only a few hours per day.

25.7.5 Wildfire

Climate adaptation actions are identified in CNRA (2024) to address vulnerabilities by: (1) reducing risks of wildfire through increased use of fuel breaks and fuels reduction; (2) protecting public health and safety by reducing the risk of energy infrastructure-related ignitions that lead to catastrophic wildfire; and (3) coordinating with the USFS to improve forest health and wildfire resilience.

A climate adaptation action related to wildfire prevention and management that is included as part of Yuba Water's YRDP Proposed Project is the Fire Prevention and Response Plan (Appendix 2B-6), which was included in Yuba Water's 2017 AFLA (see Appendix 2C) and identified as a USFS 4(e) mandatory condition (Condition 52) for inclusion in the new FERC license. The purpose of the plan is to provide fire prevention procedures, reporting, and safe fire practices for Yuba Water personnel and contractors responsible for operating and maintaining the YRDP, with emphasis on NFS land.

25.7.6 Aquatic Habitat Conditions for ESA-listed Anadromous Salmonids

Climate adaptation actions identified in CNRA (2024) and the Yuba County IRWM (RWMG 2018) address vulnerabilities related to: (1) the need for developing adaptive management approaches to assess and effectively respond to climate-caused shifts in fisheries; and (2) maintaining and increasing areas of high resilience to climate change.

Climate variability in the region results in differences in annual runoff and water availability. If project operations, particularly during drought years, compound natural variation in flows and results in insufficient river flows or reservoir levels, there would be an increased risk that aquatic resources could be adversely affected (FERC 2019). As discussed in FERC (2019), possible climate-related effects on anadromous fish in the lower Yuba River could include reductions in availability of spawning or rearing habitat or stranding when YRDP and Narrows Project flows change during down-ramping periods associated with variable minimum flow requirements. As discussed below, several protective measures are incorporated into the Proposed Projects to offset these types of vulnerabilities due to climate change.

Lower Yuba River Water Temperatures

Compared to other rivers in the Central Valley, the lower Yuba River (Figure 25.5-2) is consistently one of the coldest rivers in the ESU/DPS for anadromous salmonids and green sturgeon. Yuba Water is able to provide reliable, cool-water flows released from deep in New Bullards Bar Reservoir as part of the YRDP. The average water temperature in the lower Yuba River is around 55°F, which is substantially cooler than most other Central Valley rivers (YCWA 2025). During summer, cold water temperatures (e.g., <68° F) suitable for various salmonid life stages occur in the lower Yuba River downstream of Englebright Dam, and the amount of cold water in the lower Yuba River remains generally consistent with water year type and encompasses the 24 miles of river downstream of Englebright Dam (NMFS 2022).

It is reasonable to suggest that a relatively similar pattern would continue to occur in the future under climate change. Under the expected climate warming scenario of about 5°C by the year 2100, NMFS (2014) Recovery Plan states that substantial salmonid habitat would be lost in the Central Valley, with the Yuba River being one of the only Central Valley tributaries with significant amounts of habitat remaining (Lindley et al. 2007). For green sturgeon in the Sacramento River Basin, NMFS (2018) identifies the threat of altered water temperatures due to climate change as "high" or "very high" for all lifestages except eggs. Consequently, in comparison to other Central Valley rivers that green sturgeon inhabit, the lower Yuba River would be expected to provide similar thermal refugia under future conditions due to climate change.

Lower Yuba River Habitat Enhancement

In addition to providing suitable flows and water temperatures to protect lower Yuba River fisheries resources, Yuba Water is implementing other adaptive strategies to help offset potential effects of climate change that have been identified in recent climate findings, as discussed below.

The YRDP Proposed Project includes project features that involve long-term habitat enhancements that are designed to improve connectivity and habitat conditions for fisheries resources. To provide benefits aquatic resources in the lower Yuba River, FERC staff's alternative (FERC 2019) included a requirement for Yuba Water to develop a Lower Yuba River Riparian Restoration Plan to revegetate 100 acres, across four or more sites, of currently unvegetated floodplain with cottonwood and willow. FERC staff determined that its recommended measure, in conjunction with Yuba Water's proposed spring flow recession rates (Measure AR9), will increase riparian vegetation structure in the lower Yuba River. FERC staff expects the riparian plantings to enhance habitat for anadromous salmonids by providing cover, increasing habitat availability for juveniles, and providing sources of organic matter to enhance foraging resources.

FERC staff's alternative also recommended that Yuba Water develop a LWM enhancement plan[7] that places LWM at various locations in the lower Yuba River. According to FERC (2019), the LWM augmentation will: (1) increase aquatic habitat diversity; (2) provide cover and holding habitat for juvenile salmonids; and (3) aid in the retention of spawning gravel, organic debris, and nutrients. LWM additions also are expected to create hydraulic refugia and habitat for macroinvertebrates and other aquatic organisms, which are important components of the aquatic food web.

The riparian plantings and LWM enhancements recommended by FERC staff also will increase vegetation cover along the banks of the lower Yuba River and provide additional habitat for wildlife and seed sources for further expansion of riparian vegetation over the term of the new FERC license for the YRDP (FERC 2019). When the new FERC license is issued, Yuba Water will be required to consult with CDFW, NMFS, SWRCB, USFS and USFWS to review the LWM enhancement plan goals and the timing and frequency of placement events once within the first 3

[7] As described in Appendix 2C (Yuba Water Expected Conditions in the New FERC License for the YRDP), Article 410 states that the LWM enhancement plan will be developed by Yuba Water after consultation with CDFW, NMFS, SWRCB, USFS and USFWS. FERC (2019) did not specify quantities of LWM or placement locations, deferring such details for plan development with the specified resource agencies.

years of license issuance, and then in license year 10 and every 10 years thereafter to determine if revisions to the plan are needed to meet plan objectives (Appendix 2C).

Yuba Water also uses hydropower revenues to support its mission of environmental stewardship by supporting the implementation of other non-FERC initiatives that provide current and ongoing habitat enhancement benefits to anadromous salmonids in the lower Yuba River, including the following:

- Hallwood Side Channel and Floodplain Restoration Project
- Narrows 2 Large Woody Material Mitigation Project
- Lower Long Bar Salmonid Habitat Restoration Project
- Upper Long Bar Restoration Project
- Upper Rose Bar Enhancement Project

California Salmon Strategy

Climate adaptation actions identified in CNRA (2024) are related to: (1) building climate resilience through restoration throughout the Sacramento-San Joaquin Delta watershed; (2) reconnecting aquatic and terrestrial habitats to help fish and wildlife endure drought and adapt to climate change; and (3) expediting the regulatory approval process for appropriate large habitat restoration projects. Last year, the Governor of California (2024) also issued the California Salmon Strategy for a Hotter, Drier Future: Restoring Aquatic Ecosystems in the Age of Climate Change[8], which includes actions involving Yuba Water to further advance efforts to improve fish passage and aquatic habitat conditions in the lower Yuba River, as described below.

Yuba Water is undertaking the Yuba River Resilience Initiative, which includes ventures that would enhance and restore habitat in the Yuba River Watershed for native fish while safeguarding water supplies for Yuba County farmers. The Yuba River Resilience Initiative consists of two major components:

- A Nature-Like Fishway[9] in the lower Yuba River at Daguerre Point for volitional passage for the target listed species of spring-run Chinook salmon, steelhead, and green sturgeon, and the other target anadromous fish species of Pacific lamprey, fall-run Chinook salmon and white sturgeon. The Nature-Like Fishway includes relocating the diversion and modernizing the fish screening facility for the South Canal Diversion to meet NMFS and CDFW screening criteria, while supplying water to irrigators south of the lower Yuba River. The Nature-Like Fishway also supports recovery actions (e.g., provide volitional passage upstream of Daguerre Point Dam) for green sturgeon aimed to restore passage and habitat, reduce mortality from poaching and entrainment, and address threats related to climate change (NMFS 2018).

[8] https://www.gov.ca.gov/wp-content/uploads/2024/01/Salmon-Strategy-for-a-Hotter-Drier-Future.pdf

[9] The Nature-Like Fishway includes relocating the diversion and modernizing the fish screening facility for the South Canal Diversion to meet NMFS and CDFW screening criteria, while supplying water to irrigators south of the lower Yuba River.

- A program for reintroducing spring-run Chinook salmon into the North Yuba River upstream of New Bullards Bar Reservoir.[10] CDFW is the agency leading the effort to implement the reintroduction program.

The increased availability of suitable habitat for anadromous salmonids in the lower Yuba River provided by these enhancement projects not only helps to alleviate existing threats and stressors (e.g. loss of historical floodplain habitat, loss of riparian function, loss of habitat complexity for juvenile rearing) identified by NMFS (2014, 2024), but also will help to alleviate climate concerns in the future by providing additional refugia habitat for ESA-listed species and other wildlife.

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[10] The reintroduction program is not covered by this environmental document, because the state is leading that effort. Presently, the reintroduction program represents a framework for conducting pilot studies leading to an eventual full-scale reintroduction of spring-run Chinook salmon into historical habitat in the North Yuba River upstream of New Bullards Bar Reservoir. CEQA compliance for the reintroduction pilot studies will be conducted separately as specific studies are identified and will be addressed by CDFW as the CEQA lead agency for the reintroduction program.

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CHAPTER 26
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Executive Summary

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Chapter 1 – Introduction

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CHAPTER 27
LIST OF PREPARERS

CEQA Guidelines Section 15129 states that an EIR shall identify all federal, state, and local agencies, other organizations, and private individuals consulted in preparing the draft EIR, and the persons, firm, or agency preparing the draft EIR, by contract or other authorization. This DEIR was prepared by HDR, Inc., with assistance from other persons and organizations, on behalf of Yuba Water. Specific persons involved in the preparation of the DEIR include the following:

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Danielle Tannourji	Senior Biologist
Jarvis Caldwell	Senior Biologist
Gaea Bailey	Regulatory Specialist
Victoria Hsu	Senior Air Quality Specialist
Matt Paquette	Senior Environmental Planner

Amy Lagerquist	Environmental Planner
Nathan Kling	Environmental Planner
Ariel Cohen	Environmental Planner
Samantha Phinney	Environmental Scientist
Angela Tang	GIS Technician

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Morgan Neal	Senior Fisheries Biologist
Brian Poxon	Senior Fisheries Biologist

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