

Appendix 3B

Environmental Commitments and Best Management Practices

3B.1 Introduction

This appendix presents more detail on aspects of the proposed Delta Conveyance Project (project) and environmental commitments and best management practices (BMPs) that either indirectly or generally address potential adverse effects of the project alternatives but are not proposed as specific mitigation for a potentially significant impact identified in one of the resource chapters. Environmental commitments are those actions that are incorporated into the engineering or design of the project alternative and are intended to avoid, reduce, or minimize general environmental impacts not specific to a particular potential significant resource impact. The avoidance and minimization features are included in the Mitigation Monitoring and Reporting Program (MMRP) to enhance implementation tracking, identify the responsible party, and clarify implementation timing. BMPs are standard construction practices or design elements that are incorporated into the project description to generally address the construction process environmental concerns that typically occur for most construction actions. The concept of environmental commitments and BMPs does not include (and this appendix does not discuss) the engineering or design features that are a part of the project description and are described in Chapter 3, *Description of the Proposed Project and Alternatives*, that are proposed to support the project but may indirectly address environmental effects.¹

Environmental commitments are summarized in Table 3B-1. For the purposes of this Delta Conveyance Project Final Environmental Impact Report (EIR), BMPs are considered to be part of the environmental commitments and are identified and numbered as such in Table 3B-1. Resource-specific mitigation measures are provided in the resource chapters, Chapters 7 through 32 of this Final EIR.

California Department of Water Resources (DWR) will incorporate the following environmental commitments and BMPs into the engineering or design of the project to generally avoid or minimize potential adverse environmental effects.

As some of the environmental commitments and BMPs are incorporated into engineering design in anticipation of typical conditions required for permitting and other authorizations, an environmental permitting coordinator on behalf of DWR will consult with permitting agencies and local agencies to confirm that the environmental commitments and BMPs described in this appendix are consistent with specific requirements. Where applicable, DWR will follow a local agency's policies where DWR determines such policies to be appropriate and feasible.

¹ The project has been designed to reduce numerous impacts, as described in the Efforts to Minimize Delta Community Effects Technical Memorandum in Attachment H of *Volume 1: Delta Conveyance Final Draft Engineering Project Report—Central and Eastern Options* and in the Efforts to Minimize Delta Community Effects Supplement—Bethany Reservoir Alternative Technical Memorandum in *Volume 1: Delta Conveyance Final Draft Engineering Project Report—Bethany Reservoir Alternative* (Delta Conveyance Design and Construction Authority 2022a, 2022b).

Because the environmental commitments and BMPs have been incorporated into the project description, they are not restated in the impact analysis for each resource chapter. Instead, they are incorporated by reference. A narrative discussion in the impact analysis of Chapters 7 through 32 of this Final EIR considers the environmental commitments and BMPs as part of the project, and the discussion presents the level of impact of the project, first without the environmental commitments and BMPs to determine the significance of the impact and then, as the environmental commitments and BMPs are applied, whether the impact has been reduced to a less-than-significant level and whether additional mitigation is required. Specific details regarding the responsible parties and timing, location, and reporting requirements for the environmental commitments and BMPs are included in the MMRP for the Delta Conveyance Project.

Table 3B-1. Summary of Environmental Commitments

Environmental Commitment	Chapter/Resource
EC-1: Conduct Environmental Resources Worker Awareness Training	Ch. 12, Fish and Aquatic Resources Ch. 13, Terrestrial Biological Resources
EC-2: Develop and Implement Hazardous Materials Management Plans	Ch. 9, Water Quality Ch. 12, Fish and Aquatic Resources Ch. 13, Terrestrial Biological Resources Ch. 16, Recreation Ch. 17, Socioeconomics Ch. 21, Public Services and Utilities Ch. 25, Hazards, Hazardous Materials, and Wildfire
EC-3: Develop and Implement Spill Prevention, Containment, and Countermeasure Plans	Ch. 9, Water Quality Ch. 12, Fish and Aquatic Resources Ch. 13, Terrestrial Biological Resources Ch. 16, Recreation Ch. 21, Public Services and Utilities Ch. 25, Hazards, Hazardous Materials, and Wildfire Ch. 29, Environmental Justice (Impact HAZ-2)
EC-4a: Develop and Implement Erosion and Sediment Control Plans	Ch. 9, Water Quality Ch. 10, Geology and Seismicity Ch. 11, Soils Ch. 12, Fish and Aquatic Resources Ch. 13, Terrestrial Biological Resources Ch. 16, Recreation Ch. 17, Socioeconomics Ch. 18, Aesthetics and Visual Resources Ch. 20, Transportation Ch. 21, Public Services and Utilities Ch. 26, Public Health Ch. 29, Environmental Justice

Environmental Commitment	Chapter/Resource
EC-4b: Develop and Implement Stormwater Pollution Prevention Plans	Ch. 8, Groundwater Ch. 9, Water Quality Ch. 11, Soils Ch. 12, Fish and Aquatic Resources Ch. 13, Terrestrial Biological Resources Ch. 16, Recreation Ch. 18, Aesthetics and Visual Resources Ch. 21, Public Services and Utilities Ch. 25, Hazards, Hazardous Materials, and Wildfire Ch. 26, Public Health
EC-5: Develop and Implement a Fire Prevention and Control Plan	Ch. 11, Soils Ch. 30, Climate Change
EC-6: Conduct Cultural Resources Awareness Training	Ch. 19, Cultural Resources Ch. 32, Tribal Cultural Resources
EC-7: Off-Road Heavy-Duty Engines	Ch. 18, Aesthetics and Visual Resources Ch. 22, Energy Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, Impact AQ-6, and Impact AQ-9)
EC-8: On-Road Haul Trucks	Ch. 18, Aesthetics and Visual Resources Ch. 22, Energy Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, and Impact AQ-6)
EC-9: On-Site Locomotives	Ch. 18, Aesthetics and Visual Resources Ch. 22, Energy Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, Impact AQ-6, and Impact AQ-9)
EC-10: Marine Vessels	Ch. 18, Aesthetics and Visual Resources Ch. 22, Energy Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, Impact AQ-6, and Impact AQ-9)
EC-11: Fugitive Dust Control	Ch. 13, Terrestrial Biological Resources Ch. 18, Aesthetics and Visual Resources Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, and Impact AQ-6)
EC-12: On-Site Concrete Batching Plants	Ch. 13, Terrestrial Biological Resources Ch. 18, Aesthetics and Visual Resources Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, and Impact AQ-6)

Environmental Commitment	Chapter/Resource
EC-13: DWR Best Management Practices to Reduce GHG Emissions	Ch. 21, Public Services and Utilities Ch. 22, Energy Ch. 23, Air Quality and Greenhouse Gases Ch. 29, Environmental Justice (Impact AQ-1, Impact AQ-2, Impact AQ-3, Impact AQ-5, and Impact AQ-6)
EC-14: Construction Best Management Practices for Biological Resources	Ch. 9, Water Quality Ch. 12, Fish and Aquatic Resources Ch. 13, Terrestrial Biological Resources Ch. 24, Noise and Vibration
EC-15: Sediment Monitoring, Modeling, and Reintroduction Adaptive Management	Ch. 9, Water Quality Ch. 12, Fish and Aquatic Resources
EC-16: Provide Notification of Construction and Maintenance Activities in Waterways	Ch. 9, Water Quality Ch. 12, Fish and Aquatic Resources
EC-17: Pursue Solar Electric Power Options at Conveyance Facility Sites	Ch. 22, Energy
EC-18: Minimize Construction-Related Disturbances to Delta Community Events and Festivals	Ch. 16, Recreation Ch. 17, Socioeconomics

3B.1.1 EC-1: Conduct Environmental Resources Worker Awareness Training

DWR will provide training to field management and construction personnel on the importance of protecting sensitive natural resources (e.g., special-status fish species, wildlife species, plant species, and designated critical and/or suitable habitats for these species) prior to any ground-disturbing activity. Preconstruction training will be conducted so that construction personnel are aware of their responsibilities and the importance of compliance. All trainees will be required to sign a sheet indicating their attendance and completion of environmental training. The signature pages will be provided to California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS), if requested.

Construction personnel will be educated on the types of sensitive resources in the project area and the measures required to avoid and minimize impacts on these resources. Materials covered in the training program will include environmental rules and regulations for the specific site requirements for limiting activities to approved work areas, timing restrictions, and avoidance of sensitive resource areas.

In general, trainings will include the following components.

1. The need and legal requirements for resource avoidance and protection.
2. Important timing windows for special-status species (i.e., timing of special-status fish migration, spawning, and rearing; wildlife mating, nesting, and fledging; amphibian breeding and dispersal, and plant flowering periods).
3. Identification of listed fish, wildlife, and plant species potentially affected at the worksite, which will depend upon the work to be performed and location of the work.

4. Relevant measures from environmental documents and regulatory permits to be implemented during construction for the protection of covered fish, wildlife, and plant species, depending upon work to be performed and location of the work (i.e., in-water, upland, wetland).
5. Brief discussions of special-status species and natural communities of concern.
6. Boundaries of the work area.
7. Exclusion and construction fencing methods.
8. Roles and responsibilities, including an explanation regarding the authority of biological monitors to stop work as required by permits and/or project approvals.
9. What to do when special-status fish, wildlife, or plants are encountered (including dead, injured, stressed, or entrapped individuals) in work areas.
10. Staking methods to protect resources.
11. Avoidance and minimization commitments.
12. Consequences of violations of the laws and regulations protecting resources.

A fact sheet or other supporting materials containing this information will be prepared and distributed to construction supervisors and managers, along with a list of contacts (names, numbers, and affiliations) prior to initiating construction activities. DWR will appoint a representative to be the primary point of contact for any employee or contractor who might inadvertently take² a special-status species, or a representative will be identified during the employee education program and the representative's name and telephone number provided to the fish and wildlife agencies.

If new construction personnel are added to the project, the contractor will require that the personnel receive the mandatory training and sign a sheet indicating their attendance and completion of the environmental training before starting work. The training sheets for new construction personnel will be provided to CDFW, USFWS, and NMFS, if requested.

3B.1.2 EC-2: Develop and Implement Hazardous Materials Management Plans

DWR will require that each project contractor responsible for construction of a project facility or project develop and implement a hazardous materials management plan (HMMP) before beginning construction. Multiple HMMPs will be prepared for the overall project construction activities, each considering site-specific conditions such as hazardous materials present on site and known historic site contamination. A database on known historic instances of contamination and results of any field inspections regarding the presence of hazardous chemicals will be maintained. The HMMPs will provide detailed information on the types of hazardous materials used or stored at all sites associated with the water conveyance facilities (e.g., intake pumping plants, maintenance facilities); phone numbers of applicable city, county, state, and federal emergency response agencies; primary, secondary, and final cleanup procedures; emergency-response procedures in case of a spill; and

² Under Section 9 of the Endangered Species Act, the term *take* means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct. Take includes the modification of a listed species' designated critical habitat. Under the California Endangered Species Act, *take* refers to mortality or injury of any fish, wildlife, or plant species that has been listed as endangered or threatened or designated as a candidate for listing, but not the modification of habitat for a listed species.

other applicable information. The HMMPs will include appropriate practices to reduce the likelihood of a spill of toxic chemicals and other hazardous materials during construction and facilities operation and maintenance. A specific protocol for the proper handling and disposal of hazardous materials will be established before construction activities begin, will be implemented during project construction, and will be enforced by DWR.

The HMMP will include, but not be limited to, the following measures or practices.

1. Fuel, oil, and other petroleum products will be stored only at designated sites.
2. Hazardous materials containment containers will be clearly labeled with the identity of the hazardous materials contained therein, handling and safety instructions, and emergency contact information.
3. Storage, use, or transfer of hazardous materials in or near wet or dry streams will be consistent with the Fish and Game Code (Section 5650) and/or with the permission of CDFW.
4. Material Safety Data Sheets will be made readily available to the contractor's employees and other personnel at the work site.
5. The accumulation and temporary storage of hazardous wastes will not exceed 90 days.
6. Soils contaminated by spills or cleaning wastes will be contained and removed to an approved disposal site by an appropriately-certified hazardous waste disposal contractor.
7. Hazardous waste generated at work sites, such as contaminated soil, will be segregated from other construction spoils and properly handled, hauled, and disposed of at an approved disposal facility by a licensed hazardous waste hauler in accordance with applicable law and regulations. The contractor will obtain permits required for such disposal.
8. Emergency spill containment and cleanup kits will be located at the work site. The contents of the kit will be appropriate to the type and quantities of chemical or goods stored at the work site.
9. Handling and disposal of roadway materials will follow existing standards and specifications.
10. These steps will be taken when refueling vehicles at construction sites.
 - a. Refueling will only occur when employees are present.
 - b. Refueling will be conducted only with approved pumps, hoses, and nozzles.
 - c. All disconnected hoses will be placed in containers to collect residual fuel from the hoses.
 - d. Vehicle engines will be shut down during refueling.
 - e. When refueling is completed, the service truck will leave the project site.

3B.1.3 EC-3: Develop and Implement Spill Prevention, Containment, and Countermeasure Plans

DWR will require that each project contractor responsible for construction of a project facility or project develop and implement a spill prevention, containment, and countermeasure plan (SPCCP) for each project site (typically required to meet state and federal water quality requirements). Multiple SPCCPs will be prepared for project construction activities, each taking into account site-specific conditions. The SPCCPs will be developed in accordance with the regulatory requirements of

Title 40 of the Code of Federal Regulations (CFR), Part 112, or the Spill Prevention, Control, and Countermeasure Rule under the Oil Pollution Act of 1990, which includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters of the United States and adjoining shorelines. The rule requires the preparation, amendment, and implementation of site-specific SPCCPs to prevent and respond to oil discharges that could affect navigable waters. The SPCCPs will be developed and implemented to minimize effects from spills of oil or oil-containing products³ during project construction and operation. Each SPCC plan will address actions used to prevent spills in addition to specifying actions that will be taken should any spills occur, including emergency notification procedures.

The SPCCPs will include the following measures and practices.

1. Discharge prevention measures will include procedures for routine handling of products (e.g., loading, unloading, and facility transfers) (40 CFR § 112.7(a)(3)(i)).
2. Discharge or drainage controls will be implemented such as secondary containment around containers and other structures, equipment, and procedures for the control of a discharge (40 CFR § 112.7(a)(3)(ii)).
3. Countermeasures will be implemented for discharge discovery, response, and cleanup (both the facility's capability and those that might be required of a contractor) (40 CFR § 112.7(a)(3)(iii)).
4. Methods of disposal of recovered materials will comply with applicable legal requirements (40 CFR § 112.7(a)(3)(iv)).
5. Personnel will be trained in emergency response and spill containment techniques, and will also be made aware of the pollution control laws, rules, and regulations applicable to their work.
6. Petroleum products will be stored in non-leaking containers at impervious storage sites from which an accidental spill cannot escape.
7. Absorbent pads, pillows, socks, booms, and other spill containment materials will be stored and maintained at the hazardous materials storage sites for use in the event of an accidental spill.
8. Contaminated absorbent pads, pillows, socks, booms, and other spill containment materials will be placed in non-leaking sealed containers until transport to an appropriate disposal facility.
9. When transferring oil or other hazardous materials from trucks to storage containers, absorbent pads, pillows, socks, booms or other spill containment material will be placed under the transfer area.
10. Refueling of construction equipment will occur only in designated areas that will be a minimum of 150 feet from surface waters and other sensitive habitats, such as wetlands.
11. Equipment used in direct contact with water will be inspected daily for oil, grease, and other petroleum products. All equipment must be cleaned of external petroleum products prior to beginning work where contact with water may occur to prevent the release of such products to surface waters.
12. Oil-absorbent booms will be used when equipment is used in or immediately adjacent to waters.

³ "Oil" includes a variety of petroleum and non-petroleum-based substances including gasoline, diesel fuel, motor oil, hydraulic fluid, aviation fuel, oil-based paint, oil-based paint thinner, roofing tar, and petroleum-based solvents.

13. All reserve fuel supplies will be stored only within the confines of a designated staging area, to be located a minimum of 150 feet from surface waters and other sensitive habitats, such as wetlands.
 14. Fuel transfers will take place a minimum of 150 feet from surface waters and other sensitive habitats, such as wetlands, and absorbent pads will be placed under the fuel transfer operation.
 15. Staging areas will be designed to contain contaminants such as oil, grease, fuel, and other petroleum products so that should an accidental spill occur, they do not drain toward receiving waters or storm drain inlets.
 16. All stationary equipment will be staged in appropriate staging areas and positioned over drip pans.
 17. In the event of an accidental spill, personnel will identify and secure the source of the discharge and contain the discharge with sorbents, sandbags, or other material from spill kits and will contact appropriate regulatory authorities (e.g., National Response Center will be contacted if the spill threatens navigable waters of the United States or adjoining shorelines, as well as other appropriate response personnel).
 18. These steps will be taken when refueling vehicles at construction sites.
 - a. Refueling will only occur when employees are present.
 - b. Refueling will be conducted only with approved pumps, hoses, and nozzles.
 - c. All disconnected hoses will be placed in containers to collect residual fuel from the hoses.
 - d. Vehicle engines will be shut down during refueling.
 - e. When refueling is completed, the service truck will leave the project site.
- Methods of cleanup may include the following.
19. Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
 20. Mechanical methods include, but may not be limited to, the use of vacuum cleaning systems and pumps.
 21. Chemical methods include the use of appropriate chemical agents such as sorbents, gels, and foams.

3B.1.4 EC-4a: Develop and Implement Erosion and Sediment Control Plans

DWR will require all contractors prepare and implement erosion and sediment control plans⁴ to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas damaged by construction activities. Multiple erosion and sediment control plans will be prepared for project-related construction activities, each taking into account site-specific

⁴ An erosion and sediment control plan is typically required for ground-disturbing projects as part of the National Pollutant Discharge Elimination System (NPDES)/SWPPP permitting process (U.S. Environmental Protection Agency 2007), depending on the size of the disturbed area. The Phase II EPA rules would cover project activities with 1 or more acres of ground disturbance.

conditions such as proximity to surface water, erosion potential, drainage, etc. The plans will include all the necessary CGP requirements regarding erosion control and will specify BMPs for erosion and sediment control that are to be implemented during construction activities. These BMPs will be incorporated into the stormwater pollution prevention plans (SWPPPs) (see EC-4b: *Develop and Implement Stormwater Pollution Prevention Plans*). In addition, to reduce aesthetic impacts, the tops and bottoms of spoils disposal areas will be rounded, and slope faces will be contoured, to create more natural-looking landforms; these will be planted with diverse appropriate native and indigenous vegetation that will also help control erosion.

Erosion control measures will include the following.

1. Install physical erosion control stabilization features (hydroseeding with native seed mix, mulch, silt fencing, fiber rolls, sandbags, and erosion control blankets) to capture sediment and control both wind and water erosion. Erosion control may not use netting made with plastic monofilament or similar materials or netting with cross joints that are bound or stitched (such as straw wattles, fiber rolls, or erosion control blankets), which could trap wildlife including snakes or birds. All fiber rolls, straw wattles, and hay bales used within and adjacent to the project site shall be free of nonnative plant materials. Fiber rolls or erosion-control mesh shall be made of loose-weave mesh that is not fused at the intersections of the weave, or other products without welded weaves.
2. Keep emergency erosion-control supplies on-site at all times during construction, and have the contractor(s) use these emergency stockpiles as needed. DWR and/or the contractors will require that supplies used from the emergency stockpiles are replaced within 48 hours. DWR will also require that materials used in construction of erosion control methods will be removed from the work site and properly disposed when no longer needed.
3. Design grading to be compatible with adjacent areas and minimize potential for disturbance of adjacent terrain and natural land features and minimize erosion in disturbed areas to the extent practicable.
4. Divert runoff away from steep, denuded slopes, or other critical areas with barriers, berms, ditches, or other facilities.
5. To the extent possible, retain native trees and vegetation to help stabilize hillsides, retain moisture, and reduce erosion.
6. Limit construction, clearing of native vegetation, and disturbance of soils to areas of proven stability.
7. To the extent possible, sequence clearing of native vegetation and disturbance of soils to minimize overall time of soil disturbance.
8. Implement construction management and scheduling measures to avoid exposure and mitigate erosion from rainfall events, runoff, or flooding at construction sites, to the extent feasible.
9. Conduct frequent site inspections (before, during, and after significant storm events) to confirm that control measures are intact and working properly and to correct problems as needed.
10. Install runoff and drainage control features (e.g., berms and swales, slope drains) as necessary to avoid and minimize erosion.
11. Install wind erosion control features (e.g., application of hydraulic mulch or bonded fiber matrix).

12. Watertight forms and other containment structures will be used to prevent spills or discharge of raw concrete, wash water, and other contaminants from entering surface waters and other sensitive habitats during overwater activities (e.g., casting of barge decks).

Sediment control measures will include the following.

13. Use sediment ponds, silt traps, wattles, berms, barriers, physical treatment facilities, or similar measures to slow water velocity and retain sediment transported by on-site run on or runoff.

14. Collect and direct surface run on and runoff at non-erosive velocities to on-site treatment facilities for storage and reuse as needed with controlled flows and velocities to drainage courses.

15. When ground-disturbing activities are required adjacent surface water, wetlands, or aquatic habitat, use sediment and turbidity barriers, treatment facilities, soil stabilization, and revegetation of disturbed surfaces.

16. Prevent mud from being tracked onto public roadways by installing gravel on primary construction ingress/egress points, rumble plates, and/or truck tire washing.

17. Deposit or store excavated materials away from drainage courses and apply soil stabilization materials if left in place for more than 5 days or storm events are forecast within 48 hours.

After construction is complete, site-specific restoration efforts will include grading, post construction BMPs for erosion control, and revegetation. Self-sustaining, local native plants that require little or no maintenance and do not create an extreme fire hazard will be used. All disturbed areas will be graded, recontoured to pre-project contours, as feasible, and seeded with a native seed mix. Consideration will also be given to additional replacement of or upgrades to drainage facilities to avoid and minimize erosion. Paved areas damaged by construction activities will be repaved to avoid erosion due to pavement damage. Once post construction BMPs are constructed and revegetation is appropriately established, a Notice of Termination will be filed with the State Water Board. DWR will apply for a long-term SWPPP permit with the Central Valley Water Board for operations of the intake, tunnel shaft, and Southern Complex or Bethany Complex sites that will include long-term erosion control plans.

3B.1.5 EC-4b: Develop and Implement Stormwater Pollution Prevention Plans

Project activities that disturb 1 or more acres of land have the potential to alter stormwater runoff. This includes project activities that require excavation, grading, or stockpiling material at project sites, which could result in temporary and/or permanent changes to drainage patterns, paths, and facilities that would, in turn, cause changes in drainage flow rates, directions, and velocities of runoff, or constituents of runoff. Construction sites for the intakes, tunnel shafts, concrete batch plants, Southern Complex, and Bethany Complex would include facilities to capture and divert all runoff, dewatering, and decant flows (from soil material storage areas) to on-site treatment facilities for direct on-site reuse or on-site storage. If these flows exceed the on-site reuse demand or storage capacities, the treated water would be discharged into adjacent water bodies. Construction sites for

access roads and installation activities for electrical and SCADA connections would include methods described in this section to protect water quality of adjacent water bodies.⁵

DWR will require that the construction contractors implement measures, as described below, as part of the construction activities and in advance of any necessary permit(s). In accordance with this environmental commitment, DWR will require the preparation and implementation of stormwater pollution prevention plans (SWPPPs) to control short-term and long-term effects associated with construction-generated stormwater runoff. The SWPPPs will include all the necessary state requirements regarding construction-generated stormwater collection, detention, treatment, and discharge that will be in place throughout the construction period.

For the alternative selected, a series of separate but related SWPPPs will be prepared by a Qualified SWPPP Developer (QSD) and will be implemented under the supervision of a Qualified SWPPP Practitioner (for each construction site and/or each construction contract). As part of the procedure to gain coverage under the CGP, the QSD will determine the "Risk Level" (Levels 1, 2, or 3, or Types 1, 2, or 3 for linear underground/overhead projects) of the construction activities covered by a given SWPPP, which involves an evaluation of the site's "Sediment Risk" and "Receiving Water Risk." The risk level of the site will be determined based on the probability of a significant risk of causing or contributing to an exceedance of a water quality standard based on the construction activities to be performed, the existing water quality, soil and sediment conditions, without additional requirements (pursuant to Order No. 2009-0009-DWQ as amended by Order Nos. 2010-0014-DWQ and 2012-2006-DWQ).

The risk is calculated separately for sediment and receiving water, with two risk categories for receiving water (low and high) and three risk categories for sediment risk (low, medium, and high). The overall project risk levels (1, 2, or 3) are then determined through a matrix, where Risk Level 1 applies to projects with low receiving water and sediment risks, Risk Level 3 for projects with high receiving water and sediment risks, and Risk Level 2 for all other combinations of sediment and receiving water risks. These project risk levels determine the level of protection (i.e., the BMPs to be used) and monitoring that is required for the project. If the site is Risk Level 2 or 3, water sampling for pH and turbidity will be required and the SWPPP will specify sampling locations and schedule, sample collection and analysis procedures, and recordkeeping and reporting protocols. Other typical requirements for such situations are provided below under Risk Levels 2 and 3.

Table 3B-2 shows how varying sediment risk and receiving water risk combine to result in a given Risk Level for a given construction site.

Table 3B-2. Combined Risk Level Matrix

		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1		Level 2
	High		Level 2	Level 3

⁵ These activities are regulated under the Construction General Permit for Construction and Land Disturbance Activities (Construction General Permit [CGP]) (Order 2010-0014-DWQ or any more recent version) issued from the State Water Resources Control Board (State Water Board). The CGP requires the development and implementation of a stormwater pollution prevention plan for NPDES permit coverage for stormwater discharges.

Changes in runoff characteristics associated with construction activities have the potential to be detrimental to special-status fish and wildlife species as well as aquatic habitat and natural communities associated with receiving waters, through changes in ambient water temperature, sediment, and pollutants resulting from stormwater runoff. The objectives of the SWPPPs will be to (1) identify pollutant sources associated with construction activities and operations that may affect the quality of stormwater and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. The SWPPP will be kept on-site during construction activity and operations and will be made available upon request.

The SWPPP will describe site topographic, soil, and hydrologic characteristics; construction activities and schedule; construction materials to be used, including sources of imported fill material and other potential sources of pollutants at the construction site; potential non-stormwater discharges (e.g., trench dewatering); erosion and sediment control measures; "housekeeping" BMPs to be implemented; a BMP implementation schedule; a site and BMP inspection schedule; and ongoing personnel training requirements. The SWPPP will also include a hazardous materials management plan. These provisions are intended to prevent water quality degradation related to pollutant discharge to receiving waters and to prevent or constrain changes to the pH of receiving waters. Performance standards are expected to be specified in the CGP and will be met by implementing stormwater pollution prevention BMPs that are tailored to specific site conditions, including the Risk Level of individual construction sites. These measures mirror the requirements to gain and maintain coverage under the anticipated CGP. DWR will consult with the appropriate Regional Water Quality Control Board (RWQCB) or State Water Board to determine the appropriate aggregation of specific construction activities, or groups of activities, to be authorized under the CGP.

Multiple SWPPPs will be prepared for project-related construction activities, with a given SWPPP prepared to cover a particular water conveyance component (e.g., Southern Forebay), groups of components (e.g., intakes), and site-specific conditions (e.g., proximity to surface water, drainage). The risk level will be identified for each action covered by a specific SWPPP.

These SWPPPs will generally follow the U.S. Environmental Protection Agency (EPA) (2007) guidelines for such plans and would typically identify the following list of BMPs. These BMPs are requirements common to all Risk Level sites; however, some detail is provided in "Inspection and Monitoring" on various Risk Level requirements.

1. Erosion Control Measures.

- a. Implement effective wind erosion BMPs, such as watering, application of soil binders/tackifiers, and covering stockpiles.
- b. Provide effective soil cover for inactive areas and all finished slopes and utility backfill areas, such as seeding with a native seed mix, application of hydraulic mulch and bonded fiber matrices, and installation of erosion control blankets and rock slope protection.

2. Sediment Control Measures.

- a. Prevent transport of sediment at the construction site perimeter, toe of erodible slopes, soil stockpiles, and into storm drains.
- b. Capture sediment via sedimentation and stormwater detention facilities.

- c. Reduce runoff velocity on exposed slopes.
 - d. Reduce off-site sediment tracking.
3. Management Measures for Construction Materials.
 - a. Cover and berm inactive stockpiled construction materials.
 - b. Store chemicals in watertight containers.
 - c. Minimize exposure of construction materials to stormwater.
 - d. Designate refueling and equipment inspection/maintenance locations.
 - e. Control of drift and runoff from areas treated with herbicides, pesticides, and other chemicals that may be harmful to aquatic habitats.
4. Waste Management Measures.
 - a. Prevent off-site disposal or runoff of any rinse or wash waters.
 - b. Implement concrete and truck washout facilities and appropriately sized storage, treatment, and disposal practices.
 - c. Require the containment of sanitation facilities (e.g., portable toilets).
 - d. Clean or replace sanitation facilities (as necessary) and inspect regularly for leaks/spills.
 - e. Cover waste disposal containers during rain events and at end of every day.
 - f. Protect stockpiled waste material from wind and rain.
5. Construction Site Dewatering and Pipeline Testing Measures.
 - a. Reclaim site dewatering discharges to the extent practicable, or use for other construction purposes (e.g., land application for dust control).
 - b. Implement appropriate treatment and disposal of construction site dewatering from excavations to prevent discharges to surface waters, unless permitted by regulatory agencies to discharge to surface waters.
6. Accidental Spill Prevention and Response Measures.
 - a. Maintain equipment and materials necessary for cleanup of accidental spills on-site.
 - b. Clean up accidental spills and leaks immediately and dispose of properly.
 - c. Require that there are trained spill response personnel available.
7. Non-stormwater Management Measures.
 - a. Control all non-stormwater discharges during construction.
 - b. Wash vehicles in such a manner as to prevent non-stormwater discharges to surface waters.
 - c. Clean streets in such a manner as to prevent non-stormwater discharges from reaching surface water.
 - d. Discontinue the application of any erodible landscape material during rain, or within 2 days before a forecasted rain event.
8. Inspection and Monitoring Common to All Risk Levels.

- 1 a. Require that all inspection, maintenance, repair, and sampling activities at the construction
2 site will be performed or supervised by a QSP representing the discharger.
- 3 b. Develop and implement a written site-specific Construction Site Monitoring Program
4 (CSMP).
- 5 9. Inspection, Monitoring, and Maintenance Activities Based on the Risk Level of the Construction
6 Site (as defined in the State Water Board CGP).
- 7 a. Risk Level 1 Sites:
 - 8 1) Perform weekly inspections of BMPs, and at least once each 24-hour period during
9 extended storm events.
 - 10 2) At least 2 business days (48 hours) prior to each anticipated qualifying rain event (a rain
11 event producing 0.5 inch or more of precipitation), visually inspect: (a) stormwater
12 drainage areas to identify any spills, leaks, or uncontrolled pollutant sources; (b) all
13 BMPs to identify whether they have been properly implemented in accordance with the
14 SWPPP; and (c) stormwater storage and containment areas to detect leaks and require
15 maintenance of adequate freeboard.
 - 16 3) Visually observe stormwater discharges at all discharge locations within two business
17 days (48 hours) after each qualifying rain event and identify additional BMPs as
18 necessary, and revise the SWPPP accordingly.
 - 19 4) Conduct minimum quarterly visual inspections of each drainage area for the presence of
20 (or indications of prior) unauthorized and authorized non-stormwater discharges and
21 their sources.
 - 22 5) Collect one or more samples of construction site effluent during any breach,
23 malfunction, leakage, or spill observed within the construction site during a visual
24 inspection that could result in the discharge of pollutants to surface waters whether
25 visually detectable or not.
- 26 b. Risk Level 2 Sites:
 - 27 1) Perform all of the same visual inspection, monitoring, and maintenance measure
28 specified for Risk Level 1 sites.
 - 29 2) Perform sampling and analysis of stormwater discharges to characterize discharges
30 associated with construction activity from the entire disturbed area at all discharge
31 points where stormwater is discharged off-site.
 - 32 3) At a minimum, collect and analyze a minimum of three samples per day for pH and
33 turbidity during qualifying rain events. The CGP also requires the discharger to revise
34 the SWPPP and to immediately modify existing BMPs and/or implement new BMPs such
35 that subsequent discharges are below the relevant Numeric Action Levels (NALs)
36 specified by the CGP. It may be a violation of the CGP if the discharger fails to take
37 corrective action to reduce the discharge below these NALs specified by the CGP.
 - 38 4) When an active treatment system is deployed on the site or a portion of the site, collect
39 active treatment system effluent samples and measurements from the discharge pipe or
40 another location representative of the nature of the discharge.

- 5) In the event that any effluent sample exceeds an applicable NAL, Risk Level 2 dischargers will submit all storm event sampling results to the State Water Board no later than 10 days after the conclusion of the storm event. The Regional Boards have the authority to require the submittal of an NAL Exceedance Report, which includes a description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

c. Risk Level 3 Sites:

- 1) Perform all of the same visual inspection, monitoring, and maintenance measure specified for Risk Level 1 and Risk Level 2 sites.
- 2) In the event that a numeric effluent limitation (NEL) of the CGP (i.e., pH and turbidity) is exceeded and has a direct discharge into receiving waters, the discharger will subsequently sample receiving waters for all parameter(s) monitored in the discharge. An exceedance of an NEL is considered a violation of the CGP, and the discharger must electronically submit all storm event sampling results to the State and Regional Water Boards via Stormwater Multiple Application and Report Tracking System (SMARTS) no later than 5 days after the conclusion of the storm event.⁶
- 3) If disturbing 30 acres or more of the landscape and discharging directly into receiving waters, conduct a benthic macroinvertebrate bioassessment of receiving waters prior to and after commencement of construction activities to determine if significant degradation to the receiving water's biota has occurred. However, if commencement of construction is outside of an index period (i.e., the period of time during which bioassessment samples must be collected to produce results suitable for assessing the biological integrity of streams and rivers) for the site location, the discharger will participate in the State of California's Surface Water Ambient Monitoring Program.

The SWPPP will also specify the forms and records that must be uploaded to the State Water Board online SMARTS, such as quarterly non-stormwater inspection and annual compliance reports.

If the QSP determines the site is Risk Level 2 or 3, water sampling for pH and turbidity will be required and the SWPPP will specify sampling locations and schedule, sample collection and analysis procedures, and recordkeeping and reporting protocols. In accordance with the CGP numeric action level requirements, the project contractor's QSD will revise the SWPPP and modify existing BMPs or implement new BMPs when effluent monitoring indicates that daily average runoff pH is outside the range of 6.5 to 8.5 and that the daily average turbidity is greater than 250 nephelometric turbidity units (NTUs). Such BMPs may include construction of sediment traps and sediment basins, use of Baker or other type tanks, installation of rock slope protection, covering of active stockpiles in event of rain, constructing desilting basins, and use of ATS. The ability of other areas to withstand excessive erosion and sedimentation may be increased by applying additional mulching, bonded fiber matrices, and erosion control blankets; reseeding with a native seed mix; and installation of additional fiber rolls, silt fences, and gravel bag berms. The QSD may also specify changes in the manner and frequency of BMP inspection and maintenance activities. The

⁶ The State Water Board has suspended the applicability of Numeric Effluent Limitations (NELs) for pH and turbidity at Risk Level 3/LUP Type 3 construction sites. In addition, because receiving water monitoring is required only if the NELs are triggered, all receiving water monitoring requirements are also suspended. The Level 3/Type 3 NEL requirements are presented here assuming that such NELs will be reinstated when project construction commences.

determination of which BMP should be applied in a given situation is very site-specific. QSDs typically refer to the California Stormwater Quality Association's *Stormwater Best Management Practice Handbook Portal: Construction* or the similar Caltrans manual for selecting BMPs for particular site conditions.

Additionally, if a given construction component is Risk Level 3, for that component DWR will report to the State Water Board when effluent monitoring indicates that daily average runoff pH is outside the range of 6.0 to 9.0 or the daily average turbidity is greater than 500 NTUs. In the event that the turbidity NEL is exceeded, DWR may also be required to sample and report to the State Water Board pH, turbidity, and suspended sediment concentration of receiving waters for the duration of construction.

The contractor will also conduct sampling of runoff effluent when a leak, spill, or other discharge of non-visible pollutants is detected.

The CGP has specific monitoring and action level requirements for the Risk Levels, which are summarized in Table 3B-3.

Table 3B-3. SWPPP Monitoring and Action Requirements

SWPPP Requirements	Risk Level/Type		
	1	2	3
Minimum Stormwater and Non-Stormwater BMPs	✓	✓	✓
Numeric Action Levels (NAL)		✓	✓
NAL for pH: 6.5–8.5 pH units			
NAL for turbidity: 250 NTU			
Numeric Effluent Limitations (NEL)			✓
NEL for pH: 6–9 pH units			
NEL for turbidity: 500 NTU			
Visual Monitoring (weekly; before, during, after rain events; non-stormwater)	✓	✓	✓
Runoff Monitoring		✓	✓
Receiving Water Monitoring			✓

Note: The State Water Board has suspended the applicability of NELs for pH and turbidity at Risk Level 3/LUP Type 3 construction sites. In addition, because receiving water monitoring is required only if the NELs are triggered, all receiving water monitoring requirements are also suspended. The Level 3/Type 3 NEL requirements are presented here assuming that such NELs will be reinstated when project construction commences.

BMP = best management practices; pH = potential hydrogen; NTU = nephelometric turbidity unit.

The QSD preparing a SWPPP may include BMPs such as preservation of existing vegetation, perimeter control, seeding, mulching, fiber roll and silt fence barriers, erosion control blankets, protection of stockpiles, watering to control dust entrainment, rock slope protection, tracking control, equipment refueling and maintenance, concrete and solid waste management, and other measures to comply with the pH and turbidity level requirements defined by the CGP. Partly because the potential adverse effect on receiving waters depends on location of a work area relative to a waterway, the BMPs will be site-specific. For example, BMPs applied to level island-interior sites will be different than BMPs applied to water-side levee conditions. The QSP will be responsible for day-to-day implementation of the SWPPP, including BMP inspections, maintenance, water quality sampling, and reporting to the State Water Board. If the water quality sampling results indicate an

exceedance of NALs and Numeric Effluent Limitations (NELs) for pH and turbidity, as described above, the QSD will modify the type and/or location of the BMPs by amending the SWPPP in order to reduce pH, turbidity, and other contaminants to acceptable levels, consistent with CGP NALs and NELs and with the water quality objectives and beneficial uses set forth in the *Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin* (Central Valley Regional Water Quality Control Board 2018).

DWR will apply for a long-term SWPPP permit with the Central Valley Water Board for operations of the intake, tunnel shaft, and Southern Complex or Bethany Complex sites that will include long-term BMPs.

3B.1.6 EC-5: Develop and Implement a Fire Prevention and Control Plan

DWR will develop and implement a fire prevention and control plan in consultation with the appropriate fire suppression agencies to verify that the necessary fire prevention and response methods are included in the plan. The plan will include fire prevention and suppression measures as appropriate for different activities and will consider the policies and standards in the affected jurisdictions.

At a minimum, the following components, as applicable, will be included in the plan. If a component is not applicable to a specific activity, DWR or its contractor will explain in the plan why that component or a portion thereof is not included in the plan.

1. If a fire should start, the appropriate fire protection agencies will be contacted immediately.
2. Procedures and policies for controlling any fires that are on the work site, and other related fire prevention and control procedures developed in consultation with and fire protection agencies.
3. Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.
4. A list of all major potential fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each potential major hazard.
5. Smoking will be allowed only in areas designated for smoking, and these areas will be cleared of vegetation, or in enclosed vehicles. Cigarette butts are to be disposed of in car ashtrays or other approved disposal containers and dumped daily in a proper receptacle off the work site.
6. The contractor will be responsible for maintaining appropriate fire suppression equipment at the work site including a water truck or fire truck with a water tank with a capacity of at least 3,000 gallons. Fire extinguishers, shovels, and other firefighting equipment will be available at work sites and on appropriate construction equipment. The contractor will be required to require that each construction vehicle on the work site will be equipped with a minimum 20-pound (or two 10-pound) fire extinguisher(s).
7. At the work site, a sealed fire toolbox will be located at a point accessible in the event of fire. This fire toolbox will contain: one back-pack pump-type extinguisher filled with water, two axes, two McLeod fire tools, and shovels so that employees at the work site can be equipped to fight fire.

8. Gasoline-powered construction equipment with catalytic converters will be equipped with shielding or other acceptable fire prevention features. Internal combustion engines will be equipped with spark arrestors.
9. Welding sites will include fire prevention provisions.
10. The contractor will maintain contact with local firefighting agencies throughout the fire season for updates on fire conditions, and such fire conditions will be communicated daily to the on-site employees of the contractor and subcontractors daily.

In addition to the plan, fire protection will conform to the State Fire Marshal requirements and will be in full compliance with Cal/OSHA standards for fire safety and prevention. Public road modifications will be designed per the county or state standards, which includes adequate widths for first responders. The project-only access roads would be designed with widths for large construction trucks, which would also be adequate for first responders and fire suppression equipment. Any fire hydrants will be located as deemed acceptable by the State Fire Marshal and will meet state government standards. Fire protection using water will be provided by a potable water system either from the nearest municipal clean water conveyance system or from a self-contained filtration and treatment system that takes water from an adjacent waterway or a site well or tank.

3B.1.7 EC-6: Conduct Cultural Resources Awareness Training

Prior to the start of ground disturbance, a qualified DWR archaeologist will conduct a mandatory cultural resources awareness training for all personnel involved in ground-disturbing work about cultural resources sensitivity in the project footprint and cultural resources that could be encountered during work. Cultural resources awareness training will also be conducted for all operations and maintenance staff. Participants will be required to sign a form stating that they have received and understand the training. DWR will maintain the record of training and make it available to interested parties, including but not limited to State Historic Preservation Officer, the Advisory Council on Historic Preservation, local historical societies, and other interested parties such as local preservation and community organizations with a demonstrated interest in the resource, upon request. The project foreman will require that the new personnel brought onto the project receive the mandatory training before starting work.

In general, trainings will include the following components.

1. The need and legal requirements for resource avoidance and protection.
2. Types of materials that could indicate the presence of an archaeological resource.
3. Brief discussion of the cultural context for the area.
4. Roles and responsibilities, including an explanation regarding the authority of archaeological monitors to stop work if needed.
5. What to do when archaeological resources or human remains are encountered in work areas.
6. Avoidance and minimization commitments.
7. Consequences of violations of the laws and regulations protecting resources.

3B.1.8 EC-7: Off-Road Heavy-Duty Engines

3B.1.8.1 Zero-Emission Equipment

DWR will reinforce state priorities for zero-emission equipment (including generators) during construction and operation of the project. Zero-emission equipment (e.g., electric, hydrogen fuel cell) does not produce any emissions during operation from the tailpipe. Requirements for use of these technologies will follow the phased approach that focuses on implementation feasibility that is described here.

1. At the start of each construction contract, prohibit use of fossil-fuel-powered axial fans, gantry cranes, light plants, and forklifts. All construction contractors must use zero-emission versions of these equipment types.
2. By 2030, require 10% zero-emission off-road equipment in all construction contracts, where feasible (i.e., equipment is commercially available, is cost-effective, and has earned a track record of reliability in real-world construction conditions).
3. By 2035, require 100% zero-emission off-road equipment in all construction contracts, where feasible (i.e., equipment is commercially available, is cost-effective, and has earned a track record of reliability in real-world construction conditions).
4. At the start of and during project operations, require 100% zero-emission off-road equipment, where feasible (i.e., equipment is commercially available, is cost-effective, and has earned a track-record of reliability in real-world construction conditions).

DWR will support attainment of the performance standards by prioritizing contractors that operate zero-emission and electric off-road equipment and by offering contract incentives for compliance.

3B.1.8.2 Diesel Equipment

DWR will require all off-road diesel engines greater than or equal to 25 horsepower to use EPA-certified Tier 4 Final engines. This mandate does not preclude use of engines that meet certification standards more stringent than Tier 4 Final, if commercially available at the time of construction. A copy of each unit's certified tier specification, emissions rating, and any required California Air Resources Board (CARB) permit or air pollution control district operating permit will be made available to DWR at the time of mobilization of each piece of equipment. Each project contractor responsible for construction of a project facility will keep a written record (supported by equipment-hour meters where available) of equipment usage during project construction and maintenance for each piece of equipment. Each contractor will also provide DWR with monthly and annual reports of equipment operating hours documenting compliance.

All off-road diesel equipment with engines less than 25 horsepower (i.e., non-Tier 4) will be required to use renewable diesel fuel that meets the most recent ASTM D975 specification for ultra-low sulfur diesel and has a carbon intensity no greater than 50% of diesel with the lowest carbon intensity among petroleum fuels sold in California. Each project contractor responsible for construction of a project facility will provide DWR with monthly and annual reports of renewable diesel purchase records and equipment and vehicle fuel consumption. Pursuant to the In-Use Off-Road Diesel-Fueled Fleets Regulation (In-Use Regulation), contractors will also be required to submit to CARB an affirmation that the fleet complied with the renewable diesel mandate in each year that annual reporting is required under the In-Use Regulation.

All off-road diesel equipment will be required to minimize idling time either by shutting off when not in use or reducing idling time to 5 minutes (13 Cal. Code Regs. § 2449(d)(2)). Each project contractor responsible for construction of a project facility must provide clear signage that posts this requirement for workers at the entrances to the site.

3B.1.9 EC-8: On-Road Haul Trucks

3B.1.9.1 Zero-Emission Vehicles

DWR will reinforce state priorities for zero-emission vehicles (ZEVs) during construction and operation of the project. A ZEV (e.g., electric, hydrogen fuel cell) does not produce any emissions during operation from the tailpipe. Requirements for use of these technologies will follow the phased approach that focuses on implementation feasibility that is described here.

1. At the start of each construction contract, require 100% light-duty ZEVs for on-site contractor travel, where feasible (i.e., vehicle is commercially available, is cost-effective, and has earned a track-record of reliability in real-world construction conditions). On-site light-duty vehicles are defined to include automobiles and pickup trucks that will exclusively operate within the construction right-of-way for at least 6 months.
2. By 2030, require 50% medium- and heavy-duty on-site ZEVs in all construction contracts, where feasible (i.e., vehicle is commercially available, is cost-effective, and has earned a track-record of reliability in real-world construction conditions). On-site vehicles are defined to include utility trucks, service trucks, water trucks, and dump trucks that will exclusively operate within the construction right-of-way for at least 6 months.
3. By 2035, require 75% medium- and heavy-duty on-site ZEVs in all construction contracts. On-site vehicles are defined to include utility trucks, service trucks, water trucks, and dump trucks that will exclusively operate within the construction right-of-way for at least 6 months.
4. By 2035, require 50% ZEVs for all off-site short-haul and drayage (i.e., within 10 miles of a project site), where feasible (i.e., vehicle is commercially available, is cost-effective, and has earned a track-record of reliability in real-world construction conditions).
5. At the start of and during project operation, require 100% ZEVs for all vehicle types, where feasible.

DWR will support attainment of the performance standards by prioritizing contractors that operate ZEVs and electric on-road vehicles and by offering contract incentives for compliance.

3B.1.9.2 Diesel Vehicles

DWR will require all contractors to use diesel trucks that have model year engines manufactured or retrofitted ideally within the past 5 years from when the vehicles are brought to the individual construction or maintenance sites, but no more than 8 years from overall project groundbreaking. Each contractor will provide DWR with monthly and annual reports documenting compliance. All on-road diesel vehicles will be required to comply with California idling regulations (13 Cal. Code Regs. §§ 2485 and 2480).

3B.1.10 EC-9: On-Site Locomotives

DWR will require all locomotives operating within Twin Cities Complex, Southern Complex, and/or Lower Roberts Island to utilize EPA certified Tier 4 or more advanced engines. A copy of each unit's certified tier specification and any required CARB or air pollution control district operating permit will be made available to DWR at the time of mobilization of each locomotive. Each contractor will keep a written record (supported by engine-hour meters where available) of locomotive usage during project construction. Each contractor will provide DWR with monthly and annual reports of locomotive operating hours documenting compliance.

3B.1.11 EC-10: Marine Vessels

DWR will require all marine vessels to operate engines no older than model year 2010 (manufactured or retrofitted) during geotechnical investigations. All marine vessels working on intake construction will be required to operate engines no older than model year 2020 (manufactured or retrofitted). A copy of each vessel's engine specifications will be made available to DWR at the time of mobilization of each vessel. Each contractor will keep a written record (supported by engine-hour meters where available) of engine usage during project construction. Each contractor will provide DWR with monthly and annual reports of engine operating hours documenting compliance.

3B.1.12 EC-11: Fugitive Dust Control

DWR will require all contractors employ the following measures to minimize and control fugitive dust emissions.

1. Water exposed soil during active construction with adequate frequency for continued moist soil and to prevent visible dust from leaving work areas. Frequency of watering will be increased during especially dry or windy periods or in areas with high construction activity. Active work areas include (but are not limited to), graded areas, excavation areas, and demolition sites.
2. Gravel and cover all on-site vehicle travel routes with chip seal, or apply dust suppressants (e.g., Soil-Sement, PennzSuppress) on all ungraveled travel routes. On-site vehicle travel routes include (but are not limited to) staging areas, access roads, and haul areas.
3. Apply and maintain an organic biopolymer tackifier on all stockpiles during active use.
4. Cover or maintain at least 2 feet of freeboard space on haul trucks and rail cars transporting soil, sand, or other loose material on the site. Haul trucks and rail cars transporting soil, sand, or other loose material that will be traveling along freeways, major roadways, or railways will be covered.
5. If practicable, install wind breaks (e.g., plant trees, solid fencing) on the average dominant windward side(s) of construction areas. For purposes of implementation, chain-link fencing with added landscape mesh fabric adequately qualifies as solid fencing.
6. Enclose all mechanical dryers and outdoor conveyors.
7. Plant vegetative ground cover (native grass/plant seed) in disturbed areas (including stockpiles) as soon as reasonable after construction is completed. Water appropriately until vegetation is established.

8. Promptly finish and/or protect and maintain all disturbed areas in a manner to control fugitive dust. Mulch, dust palliative, soil binders, or other reasonable measures will be used in all inactive areas.
9. Establish and enforce a 15-mph speed limit for vehicles driving on unpaved portions of project construction sites.
10. Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
11. Install rattle plates and tire wheel wash facilities to stabilize construction entrances and exits, where not prohibited by site conditions.
12. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the air quality management district will also be visible to confirm compliance.

3B.1.13 EC-12: On-Site Concrete Batching Plants

DWR will require that the following measures be implemented to control fugitive dust emissions during concrete batching activities.

1. Apply best available control technology (BACT) (e.g., water and/or chemical suppressants) to reduce fugitive dust emissions from active storage piles and during aggregate and sand delivery, storage, and transfer.
2. Apply BACT (e.g., water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central dust collection systems) to reduce fugitive dust emissions during cement delivery and hopper and central mix loading.

Prior to beginning operations, batch plant managers must provide to DWR documentation that each batch plant meets this standard during operation.

3B.1.14 EC-13: DWR Best Management Practices to Reduce GHG Emissions

DWR will require all construction contractors to implement the following applicable greenhouse gas (GHG) BMPs, which are outlined in DWR's *Climate Action Plan Phase I: Greenhouse Gas Emissions Reduction Plan Update 2020* (California Department of Water Resources 2020).

3B.1.14.1 Preconstruction and Final Design BMPs

Preconstruction and final design BMPs are designed to ensure that individual projects are evaluated, and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the project.

1. **BMP 1.** Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether the specifications for the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.

2. **BMP 2.** Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
3. **BMP 3.** Confirm that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane, or solar power, to power generators to the maximum extent feasible.
4. **BMP 4.** Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.
5. **BMP 5.** Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.

3B.1.14.2 Construction BMPs

Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all Construction BMPs unless a variance is granted by the Division of Engineering Chief, Division of Operation and Maintenance Chief, or Division of Flood Management Chief, as applicable, and the variance is approved by the DWR CEQA Climate Change Committee. Variances will be granted when specific project conditions or characteristics make the BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the *Climate Action Plan Phase I: Greenhouse Gas Emissions Reduction Plan Update 2020* (California Department of Water Resources 2020).

1. **BMP 7.** Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [13 CCR Section 2485]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
2. **BMP 8.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules will be detailed in an Air Quality Control Plan prior to commencement of construction.
3. **BMP 9.** Implement tire inflation program on jobsite to confirm that equipment tires are correctly inflated. Check tire inflation when equipment arrives on site and every two weeks for equipment that remains on site. Check vehicles used for hauling materials off site weekly for correct tire inflation. Procedures for the tire inflation program will be documented in an Air Quality Management Plan prior to commencement of construction.
4. **BMP 10.** Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
5. **BMP 11.** Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

6. **BMP 12.** For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay⁷ certified truck will be used.
7. **BMP 13.** Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.
8. **BMP 14.** Develop a project-specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.
9. **BMP 15.** Evaluate the feasibility of restrictions for material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution, minimize, to the extent possible, uses of public roadways that are not designated as construction haul routes during peak commuting hours.

3B.1.15 EC-14: Construction Best Management Practices for Biological Resources

DWR will require all construction and restoration activities in and adjacent to suitable habitat for special-status species and sensitive natural communities implement BMPs and have construction monitored by qualified biologists (experience with the resources and environmental compliance training and monitoring). Depending on the resource of concern and construction timing, construction activities and areas will be monitored for compliance with water quality regulations (SWPPP monitor, see EC-4b) and with resource-specific mitigation measures developed for sensitive biological resources (biological monitoring).

Before initiating construction, DWR or its contractor, with DWR approval, will prepare a site or activity-specific environmental compliance monitoring plan to monitor, enforce and document measures to protect special-status fish, wildlife, plant species, and their habitats, designated critical habitat, and sensitive natural communities. The plan will include the following elements.

- Reference to or inclusion of the SWPPP prepared under the CGP, where one is needed. (See EC-4b, Develop and Implement Stormwater Pollution and Prevention Plans.)
- Summaries or copies of planning and preconstruction surveys (if applicable) for natural communities and special-status species.
- Description of mitigation measures to be implemented, including a description of site or activity-specific BMPs or additional measures not otherwise included in the project.
- Descriptions of monitoring parameters (e.g., turbidity), including the specific activities to be monitored (e.g., dredging, grading activities) and monitoring frequency and duration as well as parameters and reporting criteria (e.g., turbidity is not to exceed 10 NTUs above background. Exceedances will be reported and the contractor must identify and correct the cause.).

⁷ The U.S. Environmental Protection Agency (EPA) has developed the SmartWay truck and trailer certification program to set voluntary standards for trucks and trailers that exhibit the highest fuel efficiency and emissions reductions. These tractors and trailers are outfitted at point of sale or retrofitted with equipment that significantly reduces fuel use and emissions including idle reduction technologies, improved aerodynamics, automatic tire inflation systems, advanced lubricants, advanced powertrain technologies, and low rolling resistance tires. EPA Smartway (<https://www.epa.gov/smartway>).

- Description of roles and responsibilities of the monitors and protocols for notifying CDFW, NMFS, and USFWS, if needed.
- A daily monitoring log prepared by the monitor, which documents the day's construction activities, notes any problems identified and solutions implemented to rectify those problems, and document notifications of the construction superintendent and/or the fish and wildlife agencies regarding any exceedances of specific parameters (i.e., turbidity) or observations of special-status species. The monitoring log will also document construction start/end times, weather and general site conditions, and any other relevant information.

The following measures will be implemented prior to and during construction activities and field investigations for the protection of special-status fish, wildlife and plant species and their habitats, designated critical habitats, and sensitive natural communities. Additional measures may be developed for site-specific conditions or specific biological resources during the review and preconstruction planning of individual work areas.

- All in-water construction activities where special-status species are known or have a potential to occur will be conducted during the allowable in-water work windows established by the USFWS, NMFS, and CDFW for the protection of special-status fish or wildlife species. With regard to impact pile driving, work windows for the north Delta intakes may be lengthened subject to NMFS, CDFW, and USFWS approval based on success of bubble curtain or other noise attenuation methods (see Mitigation Measure AQUA-1a: *Develop and Implement an Underwater Sound Control and Abatement Plan* in Chapter 12, *Fish and Aquatic Resources*) and real-time monitoring for fish presence. In-water activities associated with mobilization and demobilization (e.g., initial movement of materials to construction sites) are not subject to the work windows. Any in-water work may occur within a cofferdam, or behind the sheet pile training walls, regardless of the timing of in-water work windows.⁸ Any extension/reduction of in-water work windows would focus on half-month increments.
 - a. Geotechnical exploration: August 1 to October 31.
 - b. North Delta intakes: June 1 to October 31, except that in-water impact pile driving is unlimited during the period June 15 to September 15, and in-water impact pile driving is subject to the conditions noted above for the periods from June 1 to June 15 and September 15 to October 31.
 - c. Modified bridges: June 1 to October 31, except that in-water impact pile driving is unlimited during the period June 15 to September 15.
 - d. California Aqueduct (between Skinner Fish Facility, Banks Pumping Plant, and Bethany Reservoir) and Delta-Mendota Canal (between Tracy Fish Collection Facility and Jones Pumping Plant): January 1 through December 31.
 - e. Work in the Delta except for the north Delta intakes, modified bridges, and California Aqueduct and Delta-Mendota Canal: August 1 to October 31.
- Qualified biologists will monitor construction activities in areas identified during the planning stages and species/habitat surveys as having special-status fish, wildlife, and plant species or their habitats, designated critical habitat, and sensitive natural communities. The intent of the biological monitoring is to confirm that specific measures that have been integrated into the

⁸ There is no impact pile driving proposed within cofferdams or behind training walls.

project design and permit requirements are being implemented correctly during construction and are working appropriately and as intended for the protection of special-status species, natural communities, and the environment in general.

- Biological monitors will be professional biologists selected for their knowledge of the special-status species and natural communities that may be affected by construction activities. The qualifications of the biologist(s) will be presented to the fish and wildlife agencies for review and written approval, consistent with permits and authorizations. If a special-status species is observed in an active work area, the biological monitors will immediately provide the construction manager and contractor with its location and recommendations to address the species' presence and steps necessary to ensure the protection of the species consistent with permits and authorizations.
- During construction, the non-disturbance buffers described under the special-status species' mitigation measures in Chapter 13, Terrestrial Biological Resources, of this Final EIR, will be established and maintained as necessary. A qualified biologist will monitor the site consistent with the requirements described for special-status species to enforce buffers and non-disturbance of sensitive resources.
- Active construction and staging areas will be delineated with high-visibility temporary fencing at least 4 feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment outside the defined project footprint. The location of fencing will be included in construction plans and/or EC sheets. Such fencing will be inspected and maintained daily by the construction foreman until completion of the project. Status of the fencing will also be verified and documented by the biological monitor. The fencing or flagging will be removed from areas after all construction activities have ceased and equipment is removed. No project-related construction activities will occur outside the delineated project construction areas.
- Project-related vehicles will observe a maximum speed limit of 15 miles per hour on unpaved non-public construction access roads and in construction sites where it is safe to do so. Paved, non-public construction access roads will observe a maximum speed limit of 30 miles per hour. Speeds limits will be posted in both directions and will be enforced. Signage would be provided for extra caution to be used on cool days when giant garter snake may be basking on roads and on rainy nights when California tiger salamander and California red-legged frog are most likely to be moving between breeding and upland habitats. Vehicles will observe a nighttime speed limit of 10 miles per hour in construction sites within the Southern Complex and Bethany Complex to avoid potential vehicle strikes of California red-legged frog, California tiger salamander, and San Joaquin kit fox.
- All ingress/egress at the project site will be restricted to those routes identified in the project plans and description. Cross-country access routes will be clearly marked in the field with appropriate flagging and signs.
- All vehicle parking will be restricted to established areas, existing roads, or other suitable areas.
- To avoid attracting predators, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in enclosed containers and trash will be removed and disposed of at an appropriate facility at least once a week from the construction or project site. All contracts with contractors will include language reminding them of the obligations to abide by all laws related to litter. These obligations will be applicable both within work areas and while traveling along public roads within the project area. Vehicles carrying trash will be required to have loads

covered and secured to prevent trash and debris from falling onto roads and adjacent properties.

- To avoid injury or death to wildlife, no firearms will be allowed on the project site except for those carried by authorized security personnel or local, state, or federal law enforcement officials.
- To prevent harassment, injury, or mortality of sensitive wildlife by dogs or cats, no pets will be permitted in the active construction area.
- To prevent inadvertent entrapment of special-status wildlife during construction in areas that may be occupied by wildlife at risk for entrapment, all excavated, steep-walled holes or trenches more than 6 inches deep, with the exception of shaft excavation, will be covered at the close of each working day with plywood or similar material or will be provided with one or more escape ramps constructed of earthfill or wooden planks at no more than a 30° angle. Shaft excavation sites are exempt from this measure because it would not be feasible to place a ramp into a vertical shaft. Rather than a vertical ramp inside the shaft, suitable barriers, approved by a qualified biologist prior to construction at the shaft site (e.g. chain link fence for large wildlife such as foxes and appropriate exclusion barriers for amphibians and reptiles), will be placed around the shaft opening to prohibit entry of wildlife into the shaft. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.
- If a special-status species is encountered during construction work, including dewatering, generally construction activities should be diverted away from the animal or, depending upon the conditions and specification in the relevant environmental documents and permits, work will cease until it moves out of the work area on its own or is relocated by a qualified biologist, following the species-specific mitigation measures appearing in the environmental documents and relevant permits. The monitor's authority to stop work will depend on the species encountered and the specific requirement of the relevant environmental documents and permits.
- Capture and relocation of trapped or injured special-status wildlife can only be performed by personnel with appropriate USFWS and CDFW handling approvals. Any sightings and any incidental take will be reported to CDFW and USFWS via email within 1 working day of the discovery. A follow-up report will be sent to these agencies, including dates, locations, habitat description, and any corrective measures taken to protect special-status species encountered. For each special-status species encountered, the biologist will submit a completed CNDDDB field survey form (or equivalent) to CDFW no more than 90 days after completing the last field visit to the project site.
- Plastic monofilament netting or similar material will not be used for erosion control, because smaller wildlife may become entangled or trapped in it. Acceptable substitutes include coconut coir matting, burlap-wrapped straw wattles, or tackified hydroseeding compounds. This limitation will be communicated to the contractor through specifications or special provisions included in the construction bid solicitation package.
- Wildlife, including special-status wildlife and their predators, can be attracted to den-like structures such as debris piles or pipes and may enter stored pipes and become trapped or injured. All pipes and culverts stored in the open will have their ends capped. Debris piles should be kept to a minimum and removed regularly. All construction, construction equipment, or construction debris left overnight in areas that may be occupied by wildlife that could occupy

such structures will be inspected by the biological monitor prior to being used for construction. Such inspections will occur at the beginning of each day's activities, for those materials to be used or moved that day.

- CDFW, NMFS and/or USFWS will be notified within 1 working day of the discovery of, injury to, or mortality of a special-status species that results from project-related construction activities or is observed at the project site. Notification will include the date, time, and location of the incident or of the discovery of an individual special-status species that is dead or injured. For a special-status species that is injured or killed, general information on the type or extent of injury or likely cause of death will be included. The location of the incident will be recorded using a GPS and the coordinates will be made available upon requests by CDFW, NMFS and/or USFWS. The biologist is encouraged to include any other pertinent information in the notification. All observations of special-status species will be reported to the California Natural Diversity Database.
- Rodenticides and herbicides will be used in accordance with the manufacturer-recommended uses and applications and in such a manner as to prevent primary or secondary poisoning of special-status fish, wildlife, and plant species and depletion of prey populations upon which they depend. Broadcast baiting will be avoided on all project-related and mitigation lands. Rodenticides will not be used on compensatory mitigation lands. All uses of such compounds will observe label and other restrictions mandated by EPA, the California Department of Pesticide Regulation, and other appropriate state and federal regulations, as well as additional project-related restrictions imposed by USFWS, NMFS and/or CDFW. If rodent control must be conducted in San Joaquin kit fox habitat, zinc phosphide should be used because of its proven lower risk to kit fox. Use of pesticides may be limited in other species-specific instances as well. In addition, the method of rodent control will comply with those discussed in the 4(d) rule published in the final listing rule for California tiger salamander (69 Federal Register [FR] 47211-47248).
- The most recent available standard methods for species capture and handling, as well as species specific authorizations, will be used to capture and handle special-status fish or wildlife species. A professional biologist, with appropriate USFWS and CDFW handling approvals, will be responsible for and direct any efforts to capture and handle special-status species. Any person who captures and handles special-status species will ensure their hands are free of soaps, oils, creams, lotions, insect repellents, solvents or other potentially harmful chemicals and if not single use, nitrile or other hypo-allergenic gloves (non-latex) will be used for handling special-status fish or wildlife. To avoid transferring diseases or pathogens between aquatic habitats during the course of surveys or the capture and handling of special-status fish or wildlife species, all species captured and handled will be released in a safe, aquatic environment as close to the point of capture as possible. When capturing and handling special-status amphibians, the biologists will follow the Declining Amphibian Population Task Force's Fieldwork Code of Practice (U.S. Fish and Wildlife Service n.d.) or the most current applicable guidance. While in captivity, individual amphibians will be kept in a cool, moist, aerated environment such as a dark (e.g., green or brown) bucket containing a damp sponge. Containers used for holding or transporting these species will be sanitized and will not contain any standing water, unless transporting larvae or fish species.
- The qualified biologist(s) will maintain monitoring records that include (1) the beginning and ending time of each day's monitoring effort; (2) a statement identifying the species encountered,

including the time and location of the observation; (3) the time the specimen was identified and by whom and its condition; (4) the capture and release locations of each individual; (5) photographs and measurements of each individual; and (6) a description of any actions taken. The biologist(s) will maintain complete records in their possession while conducting monitoring activities and will immediately provide records to USFWS, CDFW, and NMFS upon request. If requested, all monitoring records will be provided to agencies according to the reporting requirements of the relevant permits.

- Permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities in suitable habitat for special-status species will be minimized by adhering to the following activities. Project designs will limit or cluster permanent project features to the smallest area possible while still permitting achievement of project goals. To minimize temporary disturbances, all project-related vehicle traffic and material storage will be restricted to established and/or designated ingress/egress points, construction areas, and other designated staging/storage areas. These areas will also be included in preconstruction surveys and, to the extent possible, will be established in locations disturbed by previous activities to prevent further effects.
- Geotechnical investigations taking place on land over tunnel sections where there will be no surface disturbance during construction will avoid citing test trenches, CPTs, and borings in aquatic features, to the extent possible. This measure would not apply to the West Tracy Fault studies because these investigations need to take place along the fault alignment to gather the necessary information to support future designs.
- Temporarily affected areas will be restored within 1 year to their pre-project conditions, including grade and hydrology. Areas to be restored to grassland will be reseeded with a non-invasive native mix of grasses and flowering forbs. Revegetation will take place during the appropriate time of year for the species being planted. A vegetation restoration plan will be prepared to facilitate revegetation of the temporary disturbance footprints on-site for each of the covered species habitats. DWR shall ensure that the vegetation restoration plan is successfully implemented to restore covered species habitat. Where there are temporary impacts to potentially suitable but unoccupied Mason's lilaeopsis (*Lilaeopsis masonii*) habitat, the vegetation restoration plan will require post-disturbance grading to elevations and hydrology suitable for Mason's lilaeopsis.
- All equipment used for construction and habitat creation, enhancement, and management will be cleaned and inspected by a qualified biologist for terrestrial invasive plant and animal species prior to entering work areas and before moving between work areas.
- Equipment to be used in aquatic habitats will be thoroughly cleaned and inspected for aquatic invasive plant propagules and animal species before entering aquatic habitats.

DWR will also develop an invasive plant species management and control plan prior to construction for each construction site. The plan will ensure that invasive plant species and populations are kept below preconstruction abundance and distribution levels and will be developed in consultation with CDFW and local experts (e.g., California Invasive Plant Council). The invasive plant species management plan will include the following elements.

- Documentation of preconstruction conditions.
- Annual monitoring to document percent cover of native and nonnative invasive plant species.

- Preparation of an annual report that includes the type, location, and quantity of the invasive plant species; the percent cover of invasive plant species for (i) the year prior to preconstruction, (ii) the current monitoring year, and (iii) any prior monitoring years; and a description of any management problems and remedial actions taken. Annual reports will be provided to CDFW on request.
- Guidance provided by the California Invasive Plant Council (2012) for weed mapping field protocols and treatment plans, with particular attention given to species rated as high-level invasives with a negative ecological impact in California (California Invasive Plant Council 2006).
- Invasive plant species management and control techniques employed where necessary. For terrestrial species, these techniques include hand or mechanical removal, chemical treatment, and targeted livestock grazing for terrestrial species management; for aquatic species, these techniques include hand or mechanical removal and chemical treatment. Only chemicals approved for use for such purposes in California may be employed in any control action.

3B.1.16 EC-15: Sediment Monitoring, Modeling, and Reintroduction Adaptive Management

It is estimated that any one of the project alternatives would entrain 4%–6% of the sediment load entering the Delta from the Sacramento River, which could have limited negative effects on turbidity and therefore on delta smelt habitat (see Impact AQUA-6: *Effects of Operations and Maintenance of Water Conveyance Facilities on Delta Smelt* in Chapter 12, *Fish and Aquatic Resources*). A multi-step process to assess and minimize potential negative effects will be implemented where necessary. The process will include multi-year monitoring and estimation of sediment entrainment during initial operations following north Delta diversion (NDD) construction; monitoring and modeling of potential effects relative to performance criteria based on the sediment entrainment estimates; and development and implementation of a sediment reintroduction plan should performance criteria have been exceeded. The process will be implemented by DWR and the permitting fish agencies (NMFS, USFWS, and CDFW) will have approval authority for products developed during the process (e.g., monitoring plans and annual reports).

The monitoring program will be the first step in the adaptive management process and will involve monitoring and estimating sediment entrainment during the first several years of operations following NDD construction. Monitoring duration will be subject to input from agency review and independent peer review but is anticipated to be at least 5 years to account for hydrological variability. Methods for estimating sediment entrainment will be determined during the planning phase and may include measurement of suspended sediment concentration and flow in the Sacramento River upstream and downstream of the NDD, as well as in the water diverted by each intake. Annual monitoring plans and results reporting will receive initial and periodic independent peer reviews facilitated by the Delta Science Program, and will be subject to approval by NMFS, USFWS, and CDFW.

The second step of the process will involve monitoring and modeling of potential effects relative to performance criteria. The specifics of the performance criteria will be developed with the input of the permitting fish agencies and independent peer review. The performance criteria are expected to

1 include assessments of habitat indicators such as the percentage of time that turbidity at monitoring
2 stations exceeds an established threshold (e.g., 12 nephelometric turbidity units; Sommer and Mejia
3 2013). To account for the likely variability in sediment delivery caused by operations (i.e., sediment
4 entrainment) and other factors (e.g., contribution of sediment from other tributaries), sediment
5 modeling (e.g., using methods from Bever et al. 2018) will be used to approximate the incremental
6 effects of operations given the estimates of sediment entrainment made during the first step of the
7 process. Assessments of achievement of performance criteria will receive independent scientific
8 peer review and will be subject to approval by NMFS, USFWS, and CDFW.

9 If the monitoring and modeling estimates of the second step indicate exceedance of performance
10 criteria attributable to operations, the third step of the proposed process will be initiated. This step
11 will involve development and implementation of a sediment reintroduction plan within 5 years of
12 the end of step two. This plan will aim to reintroduce sediment to allow performance criteria to be
13 met. Sources of sediment to be reintroduced may include proposed facilities (e.g., the NDD sediment
14 lagoons), existing facilities (e.g., Clifton Court Forebay), or locations unrelated to the project
15 alternatives, and will account for factors such as sediment composition to meet performance criteria
16 (e.g., fine particles for turbidity) and reintroduction location. Subject to approval by NMFS, USFWS,
17 and CDFW, alternative means of achieving performance criteria may also be considered (e.g.,
18 restoration of turbid tidal habitat in the vicinity of areas that do not appear to be achieving
19 performance standards). Modeling (e.g., using methods such as those of Bever and MacWilliams
20 2018, Bever et al. 2018) may be used to optimize sediment reintroduction locations relative to
21 performance criteria to be achieved. The sediment reintroduction plan will be prepared to meet
22 required permitting standards from the Central Valley RWQCB and USACE. The sediment
23 reintroduction approach will be consistent with objectives for turbidity in the Central Valley Water
24 Board's Water Quality Control Plan for the Sacramento River and San Joaquin River Basins and, if
25 necessary, will obtain coverage under an individual National Pollutant Discharge Elimination System
26 (NPDES) permit. The permitting fish agencies and independent peer review facilitated by the Delta
27 Science Program will review and provide input on the proposed sediment reintroduction plan and
28 annual reports of its implementation and monitoring to assess achievement of performance
29 standards. The sediment reintroduction plan and reports of its implementation and effectiveness
30 will be subject to approval by NMFS, USFWS, and CDFW.

31 **3B.1.17 EC-16: Provide Notification of Construction and** 32 **Maintenance Activities in Waterways**

33 DWR will notify agencies, including the U.S. Army Corps of Engineers, the Department of Boating
34 and Waterways, and the U.S. Coast Guard, before in-water construction or maintenance activities
35 begin and will notify appropriate fish and wildlife agency representatives and others when these
36 activities could affect water quality or aquatic species. The notification procedures will follow
37 stipulations included in applicable permit documents for the construction. In general, the
38 notification information will be provided in multiple languages and will include site location(s),
39 schedules, and work activities (see Section 3B.1.15, *EC-14: Construction Best Management Practices*
40 *for Biological Resources*, for additional information regarding in-water work windows). Information
41 on detours would include site-specific details regarding any temporary partial channel closures,
42 including contacting other agencies and organizations, such as the U.S. Coast Guard, boating
43 organizations, marina operators, city or county parks departments, and the California Department of
44 Pesticide Regulation, where applicable. Before maintenance activities begin in waterways, DWR will

require the posting of information regarding the maintenance of any in-water project facilities (e.g., intakes for the water conveyance facility) at nearby affected Delta marinas and public launch ramps. This information will include maintenance site location(s), maintenance schedules, speed limits, and identification of no-wake zone and/or detours, where applicable. Information on detours would include site-specific details regarding any temporary partial channel closures, including contacting the U.S. Coast Guard, boating organizations, marina operators, city or county parks departments, and California Department of Parks and Recreation, where applicable.

3B.1.18 EC-17: Pursue Solar Electric Power Options at Conveyance Facility Sites

DWR will pursue solar panel development at various locations along conveyance facility sites such as the tunnel launch shaft sites, reception and maintenance shaft sites, and on flat -roofed buildings at the Southern Complex and Bethany Complex pumping plant sites. Options will be evaluated to ensure they are logistically, economically, and environmentally feasible prior to final design and implementation. Solar power generated at these sites would be used for operating conveyance and appurtenant facilities.

3B.1.19 EC-18: Minimize Construction-Related Disturbances to Delta Community Events and Festivals

DWR will require the construction contractor coordinate with the Ombudsman to identify Delta community events and festivals that could be disturbed by construction activity (see *Sources of Contributions to the Delta Region Economy*, in Chapter 17, *Socioeconomics* and Table 16-5, Annual Community-Based Delta Recreation Events, in Chapter 16, *Recreation*). In coordination with the Ombudsman, the contractor will prepare a site or activity-specific plan to minimize and avoid construction-related disturbances, such as noise and traffic, where feasible. Specific actions could include limiting, re-routing, or avoiding truck hauling during festivals and events and developing an event specific traffic management plan to address traffic congestion. In addition, depending on the location of the event relative to the area of construction at the time, reduced construction-hours may be implemented and/or other avoidance measures (e.g., additional screening or fencing) to limit exposure of festival attendees by construction activities.

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