



Zeta Solar and Battery Energy Storage
System Project

Water Supply Assessment

August 8, 2024

Prepared for:

Longroad Development Company, LLC
125 High Street
High Street Tower, Suite 1705
Boston, MA 02210

Prepared by:

Stantec Consulting Services Inc.
100 California Street, Suite 1000
San Francisco, CA 94111

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Executive Summary

Stantec Consulting Services Inc. (Stantec) completed this Water Supply Assessment (WSA) on behalf of Longroad Development Company LLC (Applicant) for the construction, operation, and decommissioning of the Zeta Solar and Battery Energy Storage System Project (Project). The Project proposes the construction of a 75-megawatt (MW) alternating current (AC) utility-scale solar photovoltaic energy plant and a battery energy storage system (BESS) with a capacity of up to 8 hours of 75 MW AC and on-site Project substation. The Project requires analysis under the California Water Code (Water Code), as amended in 2002 by the passage of Senate Bill 610.

The Project site overlies the Delta-Mendota Subbasin of the San Joaquin Valley Groundwater Basin (SJVGB) and has had varying degrees of historic overdraft and surplus as a high-priority groundwater basin. The Project setting is located within the service area of the San Luis Water District (SLWD). However, there is no public potable water system that directly serves the Project. In addition, the Project site has been subject to a Water Administration Agreement and a Restrictive Covenant Prohibiting Irrigation with the SLWD since 2011 (recorded March 30, 2011, as instrument 2011-011545 and recorded March 30, 2011, as instrument 2011-011542, Official Records, respectively).

As described in Section 3, Regulatory Framework, the Sustainable Groundwater Management Act of 2014 (SGMA) was established in an effort to provide a statewide system for the sustainable management of groundwater. For medium- and high-priority groundwater basins, SGMA requires the designation of a Groundwater Sustainability Agency (GSA) responsible for SGMA compliance through the development and implementation of a Groundwater Sustainability Plan (GSP) for the basin. The Delta-Mendota Subbasin has been designated by DWR as a critically overdrafted high-priority basin. Six GSPs were prepared by 23 GSAs to sustainably manage the Delta-Mendota Subbasin under SGMA as further described in Section 3, Regulatory Framework. The Delta-Mendota Subbasin GSP received an "inadequate" determination in accordance with SGMA as further described in Section 4.1.5.

Table 1 summarizes anticipated potable and non-potable water demand for the Project. During construction, approximately 75 acre-feet per year (AFY) of non-potable water would be used over the project's 24-month construction period (approximately 150 acre-feet total) for dust control, soil compaction, and other similar activities.

During operation, approximately 0.06 AFY of potable water would be used by staff in the O&M office. Water for the Project's potable operation and maintenance (O&M) uses would be trucked onsite and stored in potable water tanks. A potable water storage tank with a total capacity of up to 5,000 gallons would be installed onsite near the O&M building to serve potable water demands such as hand washing and toilet flushing. The potable water delivered to the Project would be purified; however, if necessary, a filtration system may be installed at the O&M facility prior to use.

In addition, during operation, approximately 0.18 AFY of non-potable water would be used for herbicide application and up to 2.53 AFY for three panel cleanings. The maximum water use during operation would be up to 2.77 AFY. Decommissioning of the Project would require non-potable water for dust control at amounts similar to those used during construction (75 AFY).



Water for construction and operation would come from one of several sources:

- purchased from SLWD (non-potable water only),
- produced from a new or existing private well in the Delta-Mendota Subbasin (of the SJVGB), up to approximately 25 miles from the Project site,
- produced from the Merced Subbasin (of the SJVGB), up to approximately 18 miles from the Project site, and/or
- produced from the North San Benito Subbasin (of the Gilroy-Hollister Basin), up to approximately 28 miles from the Project site.

Each of the potential water supply sources listed above is analyzed in this WSA to determine water supply availability and reliability for the proposed Project. Groundwater supplies would be transported to the Project using 6,000-gallon water trucks and stored onsite. Groundwater supplies from these basins or alternatively from SLWD would be sufficient to serve the non-potable water demand of the Project during construction and operation, and the Project would not interfere with sustainable groundwater management in each subbasin, as further analyzed in Section 4.1.6.

The Project may also source surface water from another water district or private water supplier in the area from the supplier's existing sources for potable or non-potable water needs. In that scenario, Project water demand would replace existing demand and would not result in increased surface water use.

As described, this WSA assesses the sufficiency of each subbasin to support the Project's water demands. The WSA indicates that the estimated Project water demand is considered minor in the subbasins analyzed: Delta-Mendota (full subbasin) as well as the Northern and Central Delta-Mendota Region (NCDMR), Merced, and North San Benito, and all subbasins have sufficient water available to support the Project's water demands throughout the life of the Project¹. In the Delta-Mendota Subbasin and the Northern and Central Delta-Mendota Region, Project water demands would not impede on groundwater recovery activities. The impact to cumulative change in groundwater in storage over the 43-year life of the Project is 0.05 percent and 0.08 percent in the Delta-Mendota Subbasin and the NCDMR, respectively. Likewise, in the Merced Subbasin, the potential total long-term impact is considered minimal and is estimated to be 0.06 percent of the sustainable yield. The estimated sustainable yield of the Merced Subbasin is 570,000 AFY (MIUGSA et al 2022).

The North San Benito Subbasin is not in overdraft and the future water budget shows an average annual deficit of 855 AFY. The Project non-potable water demand of 75 AFY over two years of construction and one year of decommissioning could temporarily increase the groundwater budget deficit by 8.8 percent to -930 AF. The Project O&M water demand of 3 AFY could increase the annual groundwater budget deficit by 0.35 percent to -858 AF. While the construction and decommissioning water demand could have a

¹ GSP water budgets and changes in groundwater storage for the Delta-Mendota and Merced Subbasins are rounded to the nearest 1,000 AF, meaning that Project-related reductions of 225 or 50 AF are orders of magnitude smaller than the amounts used in these estimations and are well within estimation error.



short-term impact on the future groundwater budget depending on the prevailing water year type, the long-term O&M Project water demand would have a minimal impact of the future groundwater budget.

In an effort to analyze the worst-case scenario, this WSA assumes that the Project's total water demand is not accounted for in the groundwater budgets and groundwater demand scenarios analyzed in the GSPs. However, each GSP's projected groundwater budget scenario includes forecasted groundwater pumping demands from agricultural and municipal and industrial uses. As a result, the Project's total water demands may not be a new or additional demand on the basin, but potentially already accounted for within the projected groundwater demand scenarios analyzed in the GSPs. Accordingly, Project water demand may already be fully accounted for in the water rights budget for existing suppliers and the sustainable yield of the source basin.



Abbreviations

°F	degrees Fahrenheit
µg/l	micrograms per liter
AC	alternating electrical current
AF	acre-feet
AFY	acre-feet per year
APN	Assessor's parcel number
Applicant	Longroad Development Company LLC
BESS	battery energy storage system
CASGEM	California Statewide Groundwater Elevation Modeling
CEQA	California Environmental Quality Act
CUP	conditional use permit
CVP	Central Valley Project
DC	direct electrical current
DWR	California Department of Water Resources
gen-tie	generation tie
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
I-5	U.S. Interstate 5
in/yr	inches per year
MA	Management Area
MAR	Managed Aquifer Recharge
MCL	maximum contaminant level
MercedWRM	Merced Water Resources Model
mg/l	milligrams per liter
MW	megawatt
NCDMR	Northern and Central Delta-Mendota Region
O&M	operations and maintenance
PG&E	Pacific Gas and Electric
Project	Zeta Solar and Battery Energy Storage System Project
PV	photovoltaic
SB	Senate Bill
SBCWD	San Benito County Water District
SBCWD GSA	San Benito County Water District Groundwater Sustainability Agency
SGMA	Sustainable Groundwater Management Act of 2014
SLWD	San Luis Water District
Stantec	Stantec Consulting Services Inc.
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
UWMP	Urban Water Management Plan
Water Code	California Water Code



Zeta Solar and Battery Energy Storage System Project Water Supply Assessment

WSA	Water Supply Assessment
WY	Water Year



1 Project Description

1.1 Project Information

Longroad Development Company, LLC (Applicant) is seeking approval of a conditional use permit (CUP) for the construction and operation of an up to 75-megawatt (MW) alternating current (AC) utility-scale solar photovoltaic energy (PV) plant with energy storage, known as the Zeta Solar and Battery Energy Storage System (BESS) Project (Project) in unincorporated Merced County, California (Figure 1). The Applicant proposes to construct, operate, maintain, and decommission the Project and would secure CUPs from Merced County along with permits from other relevant agencies as required by law.

1.1.1 PROJECT SITE INFORMATION

The Project is located on all or portions of several contiguous assessor's parcels on approximately 650 gross acres, including Assessor's parcel number (APN) 090-130-018, APN 090-130-060, and APN 090-130-044, in portions of Sections 6 and 7 in Township 12 South, Range 11 East, Mount Diablo Base, and Meridian. The Project site includes a 1,700-foot-long generation tie (gen-tie) line to deliver power from the Project to Pacific Gas and Electric's (PG&E's) existing Mercy Springs Substation (i.e., the point of interconnection) in unincorporated Merced County. The Project site is bound on the west by the unpaved First Lift Canal Road, on the southwest by Poleline Road and the California Aqueduct, on the east by an irrigated orchard and row crops, and on the north by a conservation easement and the Vega Solar Project. The topography of the Project site is relatively flat with a gentle northeast slope.

1.1.2 LOCATION

The Project site is located in unincorporated Merced County about 10 miles southeast of Los Banos in the San Joaquin Valley. The California Aqueduct is west and southwest of the Project site (Figure 1).

1.2 Description of the Project

The Project would involve the construction, O&M, and decommissioning of a PV solar power generation facility, BESS, on-site Project substation, and other associated infrastructure. The Project also includes a 1,700-foot-long gen-tie line route extending north from the Project site to deliver power to the existing Mercy Springs Substation, which is owned and operated by PG&E. The Project would generate approximately 75 MW AC of renewable energy and include a storage capacity of up to 8 hours of 75 MW AC. The Project site is located on 650 acres of privately-owned land.

The Project would include a solar array area surrounded by an up to 8-foot-tall security fence. Rows of solar modules mounted on single-axis trackers and racking equipment would occupy most of the Project site. The modules would extend up to 12 feet above the ground at maximum tracker tilt. The Project would also include an underground DC collector system; up to 21 electrical equipment pads within the PV facility, each with inverter and transformer equipment; an approximately 15-acre BESS area with regularly spaced battery units and 70 electrical equipment pads; underground utility lines; an approximately 5-acre Project substation with riser equipment in the northwest part of the Project; an approximately 1,700-foot-



long gen-tie line consisting of 65-foot-tall wooden poles; a 0.8-acre O&M area with an O&M office, water tanks, and an adjacent O&M warehouse; an approximately 10-acre staging area/laydown yard; and internal graveled access roads (Figure 2). Construction of the Project facilities would occur over 24 consecutive months, including civil work (e.g., site preparation and grading) and facility construction with the use of heavy equipment (e.g., back-hoes, pile drivers, and excavators), followed by testing, calibration, and commissioning.

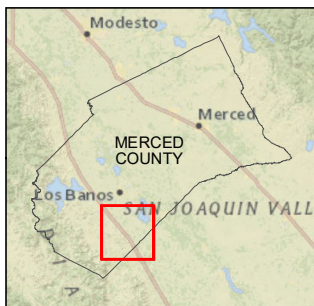
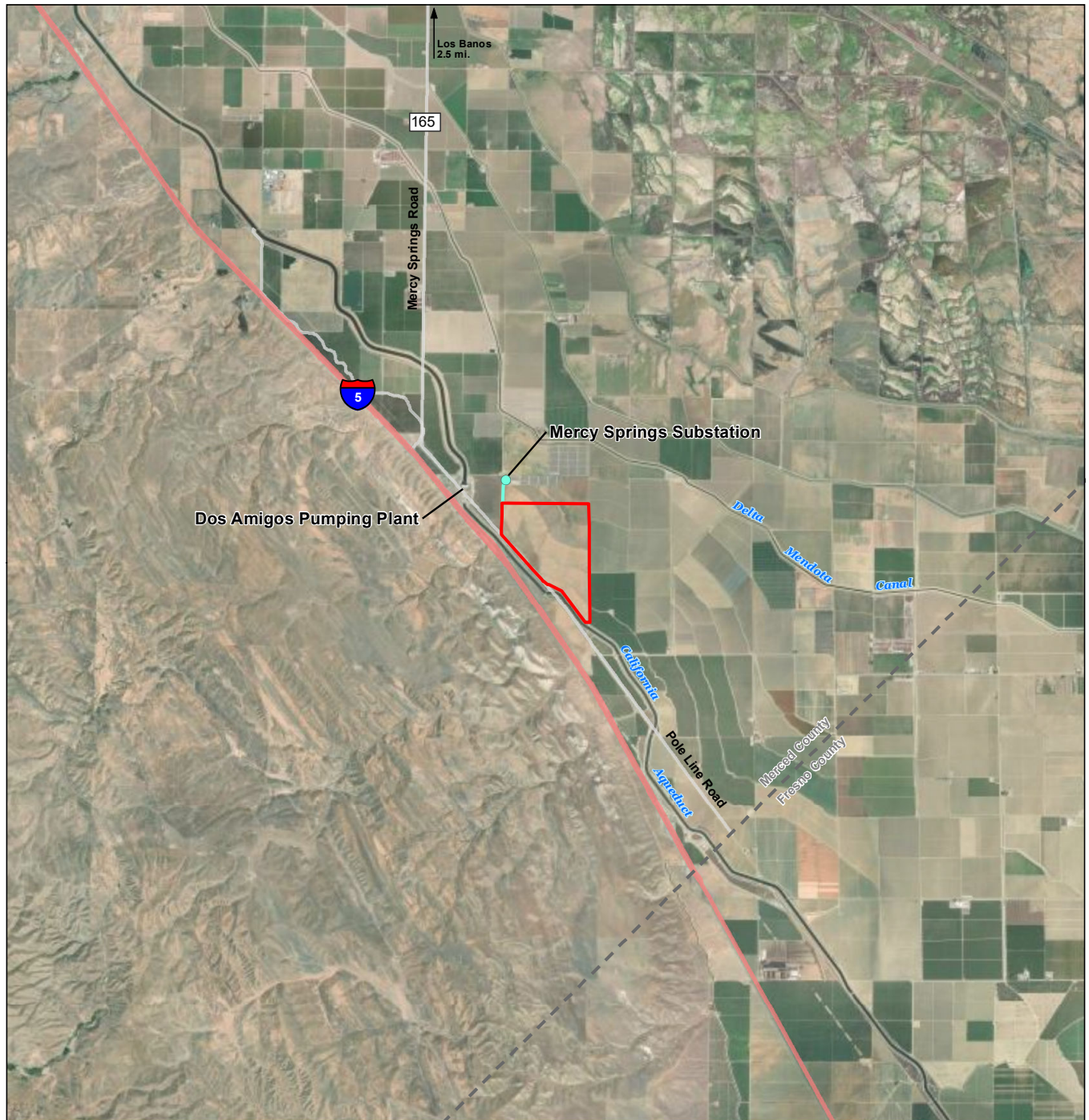
One or more aboveground non-potable water storage tanks with a capacity of up to 50,000 gallons would be installed on-site near the O&M area. The storage tank(s) near the O&M area would have the appropriate fire department connections to be used for fire suppression purposes. Additionally, a potable water storage tank with a capacity of up to 5,000 gallons would be installed on-site near the O&M building to serve potable water demands such as hand washing and toilet flushing.

Approximately 10 full-time and 10 part-time employees would operate the Project. The staff would work weekdays (sunrise to sunset) and as needed after hours and on weekends.

The Project has an anticipated operational life of approximately 40 years. At the end of the Project's operational term, the Applicant or Project proponent would determine whether the Project site should be decommissioned and deconstructed or if it would seek an extension of the Project's CUP and repower the facilities. If any portion of the Project site would be decommissioned, it would be restored to its predevelopment function.



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- Project Site Boundary
- Gen-tie
- Point of Interconnection

0 1 2
Miles
(At original document size of 8.5x11)
1:120,000



Project Location
Merced County, CA

Prepared by PG on 2024-07-18
TR by GG on 2024-07-18

Client/Project

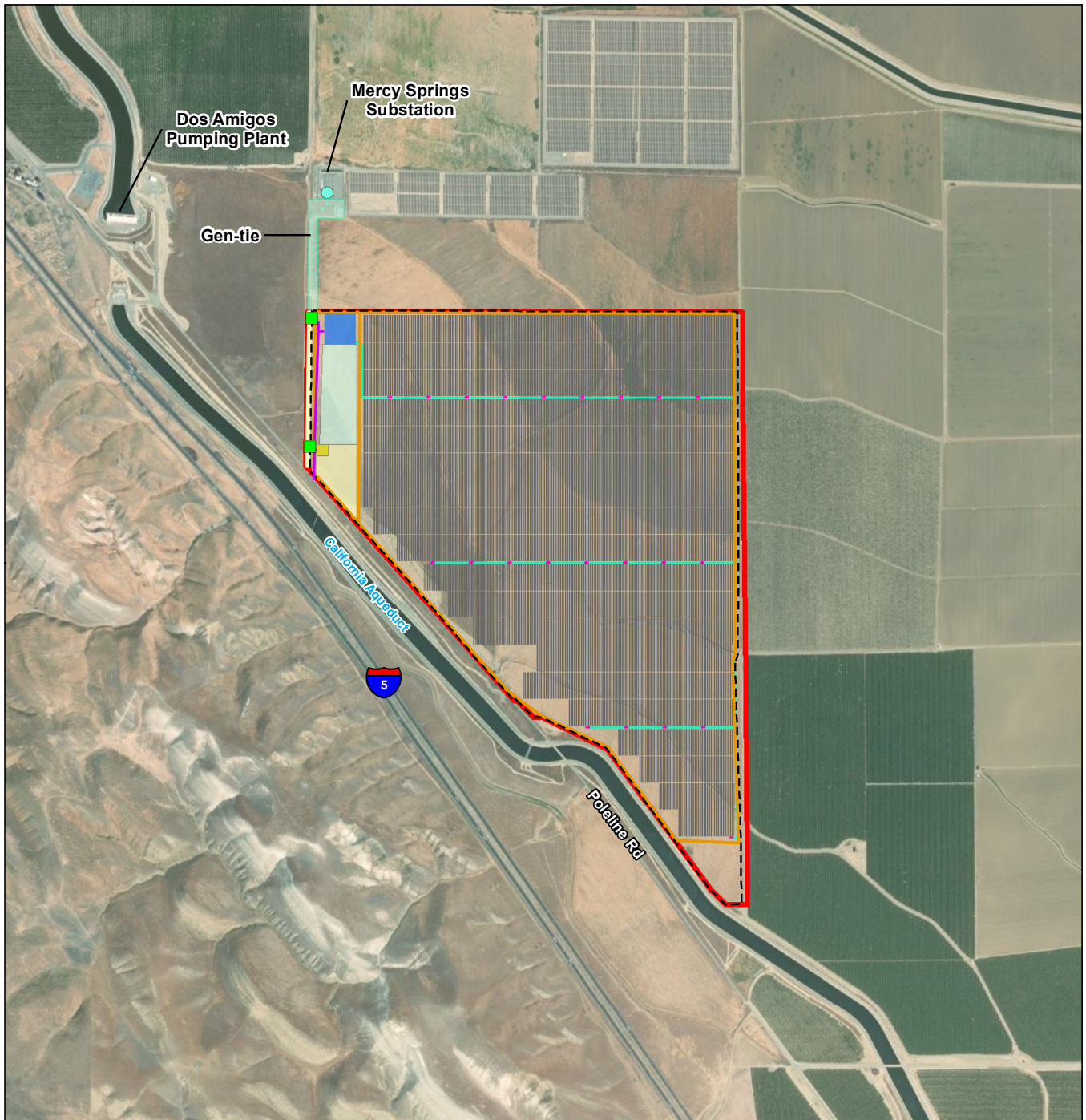
Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 1

Title
Project Location

Notes
1. Coordinate System: NAD 1983 StatePlane
California III FIPS 0403 Feet

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



- Project Site Boundary
- Gen-tie
- Gen-tie Corridor
- Point of Interconnection
- Zeta Substation
- Panel Layout
- Inverters
- O&M Building
- Laydown Yard
- BESS
- Mv Collectors
- Fence
- Access Road
- Perimeter Road
- Utility Lines
- Gate

0 0.25 0.5
Miles
(At original document size of 8.5x11)
1:24,000



Project Location
Merced County, CA

Prepared by PG on 2023-06-09
TR by TR on 2023-06-09

Client/Project

Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project

Figure 2

Project Site — Conceptual Plan

1.3 Project Water Use

1.3.1 WATER DEMAND

During construction, approximately 75 acre-feet per year (AFY) would be used over the Project's 24-month construction period (approximately 150 AF total) for dust control, soil compaction, and other similar activities.

During operation, approximately 0.06 AFY of potable water would be used by staff in the O&M office. In addition, approximately 0.18 AFY of non-potable water would be used for herbicide application and up to 2.53 AFY for three panel cleanings. The maximum water use during operation would be up to 2.77 AFY.

Decommissioning of the Project would require water use for dust control at amounts similar to those used during construction (75 AFY). Table 1 summarizes anticipated water demand.

Table 1. Anticipated Project Water Demand

Phase	Non-Potable Water Demand	Potable Water Demand	Description
Construction (2 years)	75 AFY (150 AF total)	-	Dust control, soil compaction, and other similar activities
Operation (40 years)	2.71 AFY	0.06 AFY	Herbicide application (0.18 AFY), panel cleanings (2.53 AFY), and O&M building (0.06 AFY)
Decommissioning (1 year)	75 AFY	-	Dust control, soil compaction, and other similar activities
TOTAL (43 years)	333.4 AF	2.4 AF	-

Sources: Longroad Development Company, LLC

Notes: AFY = acre-feet per year; 1 acre foot = 325,851 gallons

For the purposes of this WSA, operational water was rounded to 3 AFY. Thus, total project water analyzed in this WSA is 345 AF.

1.3.2 WATER SOURCE

Water for construction and operation would come from one of several sources:

- purchased from SLWD,
- produced from a new or existing private well in the Delta-Mendota Subbasin (of the SJVGB), up to approximately 25 miles from the Project site,
- produced from the Merced Subbasin (of the SJVGB), up to approximately 18 miles from the Project site, and/or
- produced from the North San Benito Subbasin (of the Gilroy-Hollister Basin), up to approximately 28 miles from the Project site.



Pumped water would be transported to the Project using 6,000-gallon water trucks and stored onsite. One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed on site near the O&M area. The storage tank(s) near the O&M area would have the appropriate fire department connections to be used for fire suppression purposes. Additionally, a potable water storage tank with a total capacity of up to 5,000 gallons would be installed onsite near the O&M building to serve potable water demands such as hand washing and toilet flushing.

The Project may also source surface water from another water district or supplier in the area from the supplier's existing sources for potable or non-potable water needs. In that scenario, Project water demand would replace existing demand and would not result in increased surface water use.



2 Regional Climate

The northern San Joaquin Valley region has a semi-arid climate that is characterized by hot, dry summers and cool, dry winters. Most of the annual precipitation occurs from November through April. The average minimum and maximum annual temperatures are 48.0 degrees Fahrenheit (°F) and 76.4 °F, respectively, although it is not unusual for the temperature to exceed 100°F in summer (Table 2) (City of Los Banos 2021).

Table 2. Average Monthly and Annual Evapotranspiration, Precipitation, and Temperature

Month	Average Monthly Evapotranspiration (inches)	Average Monthly Precipitation (inches)	Average Minimum Monthly Temperature (°F)	Average Maximum Monthly Temperature (°F)
January	1.15	1.88	36.3	55.1
February	2.04	1.66	39.8	62.2
March	3.75	1.42	42.8	68.1
April	5.59	0.71	46.3	74.8
May	7.52	0.34	51.8	82.5
June	8.23	0.06	56.8	89.8
July	8.59	0.02	60.5	96.5
August	7.47	0.02	59.3	95.1
September	5.63	0.17	56.2	91.4
October	3.87	0.48	49.3	80.2
November	1.93	0.97	41.1	66.5
December	1.15	1.45	36.3	55.9
Annual	56.92	9.18	48.0	76.4

Source: California Irrigation Management Information System 2021, Western Regional Climate Center 2016
Key: °F = degrees Fahrenheit

California has experienced three declared droughts in the last three decades. In 1976, the state received an average of 7.4 inches of rain. Until recently, the drought of 1987 to 1992 was considered the most severe drought in California's history. However, the severity of that drought period has been eclipsed by the historic drought experienced from 2011 to 2016, and the most recent drought that occurred from 2020 to 2022. These drought periods are often offset by periods of intense rainfall that can lead to flooding as witnessed in winter and spring 2023. This extreme climatic variability is common throughout California.



3 Regulatory Framework

3.1 Sustainable Groundwater Management Act (SGMA)

In November 2009, the governor signed into law SBx7-6, which established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The groundwater level data entered into the California Department of Water Resources (DWR') online CASGEM reporting system by monitoring entities beginning in January 2012 were used to establish groundwater basin prioritization as part of the enactment of the Sustainable Groundwater Management Act of 2014 (SGMA). Enactment of SGMA amended Water Code in an effort to provide a statewide system for the sustainable management of groundwater. For medium- and high-priority groundwater basins, SGMA requires the designation of a Groundwater Sustainability Agency (GSA) responsible for SGMA compliance through the development and implementation of a Groundwater Sustainability Plan (GSP) for the basin. GSAs have broad groundwater management powers. For example, GSAs may require groundwater well registration, measurement of groundwater extractions, and filing of annual extractions reports.

SGMA authorizes GSAs to regulate groundwater extractions by imposing well spacing requirements, limiting extractions, and establishing extraction allocations. SGMA requires that all high- and medium-priority groundwater basins must establish governance under one or more GSAs by June 30, 2017. GSAs for high- and medium-priority basins must adopt their GSP by January 31, 2022. GSAs for critically overdrafted high-priority basins must adopt their GSP by January 31, 2020. Low-priority basins are not required to prepare a GSP. These plans must set the groundwater basin on a course toward sustainable management to eliminate adverse groundwater conditions specified as undesirable results.

GSPs must include minimum thresholds and measurable objectives to achieve the goal of groundwater basin sustainability within 20 years of GSP implementation. SGMA defines sustainable groundwater management as ensuring that the applicable basin is operated within the sustainable yield. Sustainable yield is defined as the maximum quantity of water that can be withdrawn over a period of years without causing an undesirable result. An undesirable result means one or more of the following effects caused by groundwater conditions occurring throughout the basin:

- Chronic lowering of groundwater levels
- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion (not applicable in the subbasins relevant here)
- Significant and unreasonably degraded water quality
- Significant and unreasonable land subsidence that substantially interferes with surface land uses
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

The GSP must include monitoring and management for the basin over a 50-year planning horizon, and plans must articulate measurable objectives to be achieved every 5 years. DWR will review the plans and will have the power to request changes to a submitted plan. The plan must establish measurable objectives and incremental milestones every five years to achieve the sustainability goals identified in the plan within 20 years.



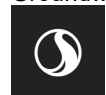
3.1.1 DELTA-MENDOTA SUBBASIN GSP

Groundwater from the Delta-Mendota Subbasin is a potential water source for the Project. The Delta-Mendota Subbasin has been designated by DWR as a critically overdrafted high-priority basin. Six GSPs were prepared by 23 GSAs² to sustainably manage the Delta-Mendota Subbasin under SGMA (Figure 3). The Project site is located within the *Northern and Central Delta-Mendota Region* (NCDMR) Groundwater Sustainability Plan area (NCDMR 2022), which is managed by the NCDMR GSP Group and consists of the following eight GSAs: Central Delta-Mendota, Patterson, DM-II, Northwestern Delta-Mendota, Oro Loma Water District, Patterson Irrigation District, West Stanislaus Irrigation District, and Wildren Water District.

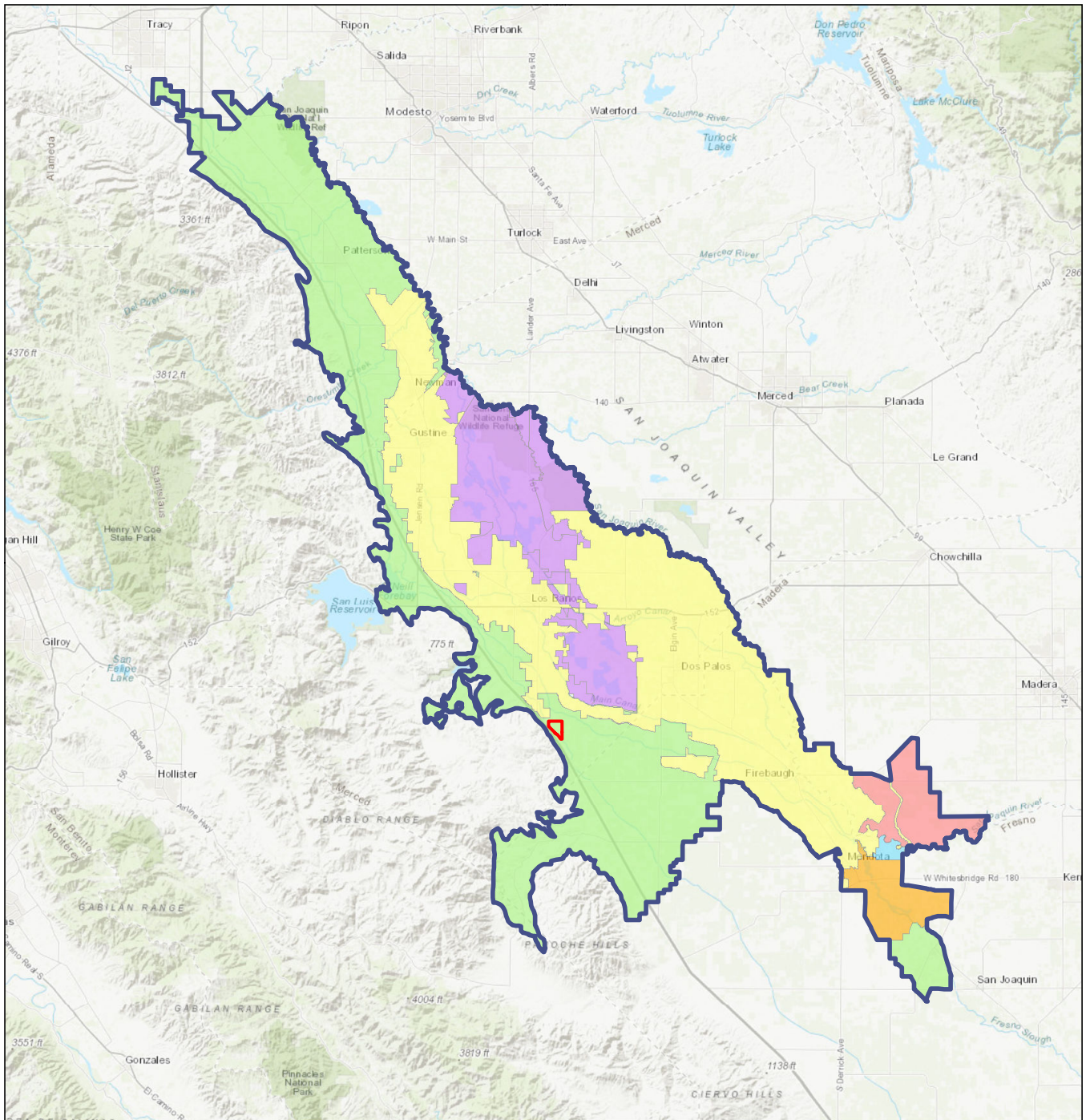
The six GSPs in the Delta-Mendota Subbasin were submitted to DWR in January 2020 by their respective GSAs, including the NCDMR GSP (NCDMR 2022). Based on an “incomplete” determination of the GSPs by DWR on January 21, 2022, revised GSPs which addressed the identified deficiencies were submitted to DWR in June 2022 (SJREC GSP Group 2022, NCDMR 2022). On March 2, 2023, DWR deemed the revised GSPs as “inadequate” and identified deficiencies which would need to be addressed to be in compliance with the SGMA. Inadequate basins will be subject to (California State Water Resources Control Board (SWRCB) hearings in 2024 and 2025 which will result in prescribed measures to create an approved GSP. Further, the determination letter also stated that primary jurisdiction of the Delta-Mendota Subbasin shifts to the SWRCB which may designate the basin “probationary.” Probationary status would allow the SWRCB to impose an interim plan which achieves the goals of SGMA. An interim plan may include reduction in groundwater production, metering of production wells, and payment of pumping fees (California Water Boards 2022).

In response to DWR’s inadequate determination, in July 2024, the Delta-Mendota Basin GSAs released an updated GSP for the Delta-Mendota Subbasin for public review. This updated Delta-Mendota Subbasin GSP consolidates the six GSPs for the basin into a single GSP with an integrated hydrological model; extends water budget projections to 2073; and integrates more recent data and addition of new projects. Furthermore, the updated Delta-Mendota Subbasin GSP provides management actions as well as details a pumping reduction plan that would significantly improve the long-term Delta-Mendota groundwater budget and change in storage conditions in the underlying aquifers. The updated Delta-Mendota Subbasin GSP has not yet been adopted, thus the analyses in this WSA are based upon the Northern and Central Delta-Mendota Region GSP and the *Groundwater Sustainability Plan for the San Joaquin Exchange Contractors GSP Group in the Delta-Mendota Subbasin (5-022.07)* dated 2022. The SWRCB will decide on the probationary status of the subbasin in early 2025 (Delta-Mendota Subbasin Coordination Committee 2024).

² Note: A combined 23 GSAs were formed in the Delta-Mendota Subbasin and six GSPs were submitted to DWR. Groundwater management at the Project site is governed by the Northern and Central Delta-Mendota GSP Group.



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Notes
1. Coordinate System: NAD, 1983, StatePlane, California, ILL, FIPS, 0403, Feet
2. Data Source: California Department of Water Resources 2023, Stantec 2023
3. Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCO, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

- Project Area (649.91 acres)
- San Joaquin Valley - Delta-Mendota Groundwater Subbasin (5-022)
- Subbasin Groundwater Sustainability Plans**
- Aliso Water District GSP
- Grassland GSP
- Farmers Water District GSP
- Fresno County Management Areas GSP
- Northern and Central Delta-Mendota Region GSP
- San Joaquin River Exchange Contractors GSP

0 6 12 Miles
(At original document size of 8.5x11)
1:800,000



Project Location Merced County, CA
Prepared by PG on 2024-09-10
TR by CS on 2024-09-10

Client/Project Longroad Energy Management, LLC
Zeta Solar and Battery Energy Storage System Project
Figure No. 3

Delta-Mendota Groundwater Subbasin Groundwater Sustainability Plans

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

As described in Section 1.3.2, groundwater from a production well located approximately 25 miles from the project is a potential water source for the project within the Delta Mendota Subbasin. Both the production well and the project site are located within the Northern and Central Delta-Mendota Region GSP area. As such, data from the Northern and Central Delta-Mendota Region GSP were used to evaluate the potential impacts of the project on groundwater in the Delta-Mendota Subbasin. However, the WSA also uses information provided in the *Groundwater Sustainability Plan for the San Joaquin Exchange Contractors GSP Group in the Delta-Mendota Subbasin (5-022.07)* as it provides groundwater projections for the full Delta-Mendota Subbasin.

3.1.2 MERCED SUBBASIN GSP

Groundwater from the Merced Subbasin is a potential water source for the Project. The Merced Subbasin has been designated by DWR as a critically overdrafted high-priority basin. The *Merced Groundwater Subbasin Groundwater Sustainability Plan* (MIUGSA et al 2022) was prepared by the three GSAs represented by the GSP: Merced Irrigation-Urban GSA (MIUGSA), Merced Subbasin GSA (MSGSA) and Turner Island Water District GSA #1 (TIWD GSA #1) to sustainably manage the Merced Subbasin. One GSP was submitted to DWR for the Merced Subbasin in November 2019. On January 28, 2022, DWR issued an “incomplete” determination letter to the GSP. Based on the comments and corrective actions presented in the “incomplete” determination letter, a revised Merced Subbasin GSP was submitted to DWR in July 2022. On August 4, 2023, DWR issued an “approved” determination letter (DWR 2023b).

Please see Section 4.1.6 for discussion of current and projected conditions in the Merced Subbasin and analysis of water supply availability.

3.1.3 NORTH SAN BENITO SUBBASIN GSP

Groundwater from the North San Benito Subbasin is a potential water source for the Project. The North San Benito Subbasin was designated by DWR as a medium priority basin. The North San Benito Subbasin was created through approval of a basin boundary modification request in 2019 by DWR from the consolidation of the Bolsa Area, Hollister Area, and San Juan Bautista Area Subbasins of the Gilroy-Hollister Basin and the Tres Pinos Valley Basin (SBCWD 2018). The *North San Benito Subbasin GSP* (SBCWD GSA 2021) was prepared by two GSAs including San Benito County Water District GSA (SBCWD GSA) and Valley Water GSA (formerly Santa Clara Valley Water District prior to 2019) and approved by DWR on July 27, 2023 (DWR 2023c). Analysis of the subbasin according to sustainability indicators defined in SGMA indicates that the subbasin has been managed sustainably, given the availability of imported Central Valley Project (CVP) water (SBCWD GSA 2021). Projections (simulated with a numerical groundwater flow model) of existing conditions, climate change, and reasonably anticipated growth indicate that the subbasin will continue to be sustainable, assuming reasonable availability of CVP water, with implementation of projects and management actions (PMAs) to avoid undesirable results.

Please see Section 4.1.6 for discussion of current and projected conditions in the North San Benito Subbasin and analysis of water supply availability.



3.2 Senate Bill 610

Senate Bill (SB) 610 was passed into law on January 1, 2002. This legislation identified the need to incorporate water supply and demand analysis at the earliest possible stage in the planning process. SB 610 amended portions of the California Water Code (Water Code), including Section 10631, which contains the Urban Water Management Planning Act, and adding Sections 10910, 10911, 10912, 10913, and 10915, which describe the required elements of a Water Supply Assessment (WSA). A WSA must examine the availability and sufficiency of an identified water supply under normal year, single dry year, and multiple dry year conditions over a 20-year projection; account for the projected water demand of the Project; and account for other existing and planned future uses of the identified water supply.



4 Water Supply Assessment

4.1 Water Supply Assessment Process

The WSA process involves answering the following questions:

- Is the Project subject to the California Environmental Quality Act (CEQA)?
- Is it a Project under SB 610?
- Is there a public water system?
- Is there a current UWMP that accounts for the Project demand?
- Is groundwater a component of the supplies for the Project?
- Are there sufficient supplies available to serve the Project over the next 20 years?

4.1.1 IS THE PROJECT SUBJECT TO CEQA?

The first step in the WSA process is determining whether the Project is subject to CEQA. SB 610 amended Public Resources Code Section 21151.9 to read, “Whenever a city or county determines that a Project, as defined in Section 10912 of the Water Code, is subject to this division [i.e., CEQA], it shall comply with part 2.10 (commencing with Section 10910) of Division 6 of the Water Code.”

The Project requires discretionary approvals from Merced County and would undergo environmental review pursuant to the requirements of CEQA. The information contained in this WSA would be used to support the analysis contained in the CEQA document.

4.1.2 IS IT A PROJECT UNDER SENATE BILL 610?

The second step in the SB 610 process is to determine whether a Project meets the definition of a “Project” under Water Code Section 10912 (a). Under this section, a “Project” is defined as meeting any of the following criteria:

- A proposed residential development of more than 500 dwelling units
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space
- A commercial building employing more than 1,000 persons or having more than 250,000 square feet of floor space
- A hotel or motel with more than 500 rooms
- A proposed industrial, manufacturing, or processing plant, or industrial park, planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

The Project is considered an industrial project that meets the definition of a “Project” under Water Code Section 10912(a) (refer to the last criteria bullet above).



4.1.3 IS THERE A PUBLIC WATER SYSTEM?

The third step in the WSA process is determining whether there is a “public water system” to serve the project. Section 10912(c) of the Water Code states, “[A] public water system means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections.”

The Project is not located within the service area of a public water system, and there are no water distribution pipelines connecting the property to a public water system. The Project is located within the service area of the SLWD; however, SLWD is primarily an irrigation water supplier and does not provide public water system connections to the Project site. It is possible that the project may purchase water from SLWD and truck that water to the Project site for use during operations; therefore, SLWD’s water supply sources are considered in this WSA as potential supply sources for the proposed Project. SLWD sources included imported surface water through the CVP and locally produced groundwater. SLWD does not provide potable water to new water customers; therefore, any water for the Project that is obtained from SLWD would be specifically for non-potable uses (SLWD 2021).

4.1.4 IS THERE A CURRENT URBAN WATER MANAGEMENT PLAN THAT ACCOUNTS FOR THE PROJECT DEMAND?

The fourth step in the WSA process involves determining whether there is a current Urban Water Management Plan (UWMP) for the Project area. California Water Code requires that all public water systems providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 AFY must prepare an UWMP, and this plan must be updated at least every five years on or before December 31, in the years ending in five and zero. Water Code Section 10910(c)(2) states, “If the projected water demand associated with the Project was accounted for in the most recently adopted UWMP, the public water system may incorporate the requested information from the UWMP in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g) [i.e., the WSA].”

The Project site is not located within a public water system’s service area; therefore, there is no UWMP applicable to the Project site. In the absence of a UWMP, which would account for all known and projected water demands and supplies in the respective area, this WSA is informed by other water supply planning documents and groundwater management documents applicable to the Project area. These include the 2020 SLWD Water Management Plan (SLWD 2021) and the GSPs for the Merced Subbasin of the SJVGB (MIUGSA et al. 2022), the Delta-Mendota Subbasin of the SJVGB (SJREC GSP Group 2022), and the North San Benito Subbasin of the Gilroy-Hollister Basin (SBCWD GSA 2021).

For the purposes of this WSA, it is assumed that the Project’s total water demand is not accounted for in the projected groundwater budget scenarios analyzed in the GSPs. However, each GSP’s projected groundwater budget scenario includes forecasted groundwater pumping demands from agricultural, municipal and industrial uses, but does not define specific projects such as the proposed Project.

4.1.5 IS GROUNDWATER A COMPONENT OF THE SUPPLIES OF THE PROJECT?

The fifth step addresses the requirements of the Water Code Section 110910 (f), paragraphs 1 through 5, which apply if groundwater is a water source for the Project. The Project’s water demand would come



from groundwater as summarized in Section 1.3.1. Pursuant to Water Code Section 10910 (f), this analysis focuses on the Delta-Mendota Subbasin, Merced Subbasin, and the North San Benito Subbasin (Figure 4); therefore, the three subbasins are assessed herein. This section characterizes existing conditions in the respective subbasins; please see Section 4.1.6, below, for groundwater budget data and supply availability projections.

Delta-Mendota Subbasin

Geography and Climate

According to the DWR (2006), the Delta-Mendota Subbasin is located in the northern portion of the SJVGB within the southern portion of the Great Valley Geomorphic Province of California (California Geological Survey 2002). It is bound on the west by the Diablo Range, on the north by the San Joaquin-Stanislous County line, on the east by the San Joaquin River and Fresno Slough, and on the south by the Tranquility Irrigation District boundary near the community of San Joaquin (SJREC GSP Group 2022). Average annual rainfall in the Delta-Mendota Subbasin averages about 9 inches (SLWD 2021). Surface water in the Delta-Mendota Subbasin drains northeast and north from adjacent watersheds in the Diablo Range onto the valley floor and/or to the San Joaquin River.

Geology and Hydrogeology

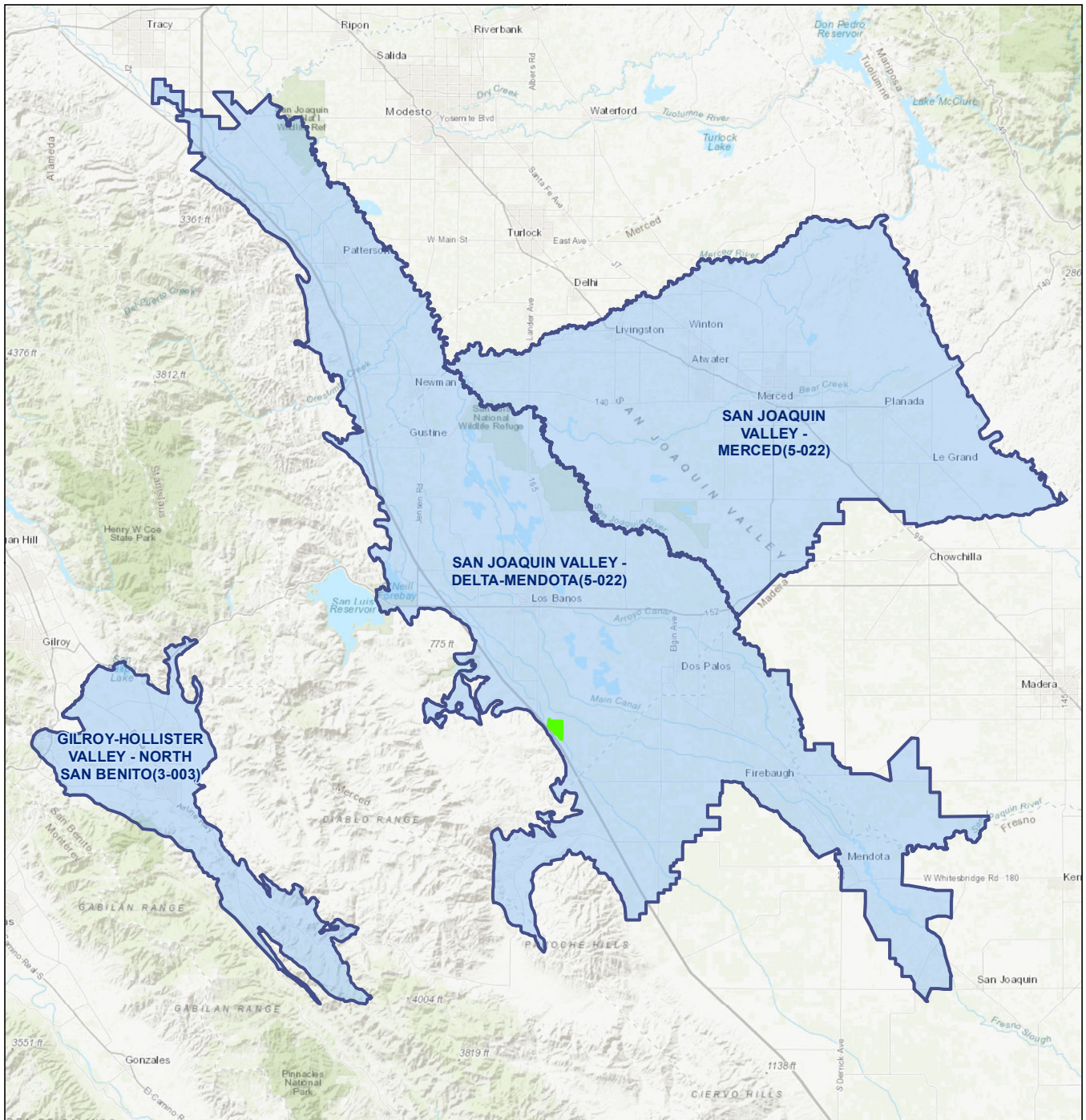
In the Delta-Mendota Subbasin, the Tulare Formation extends to depths of several thousand feet and to the base of freshwater. It is composed of interbedded layers and lenses of clay, sand, and gravel. The Tulare Formation contains the Corcoran Clay or E-Clay, a laterally extensive diatomaceous clay or silty clay deposit of lacustrine origin which separates the basin into upper and lower aquifers (NCDMR 2022). The depth to the Corcoran Clay ranges from less than 50 feet near the western margin of the subbasin to more than 400 feet in the southernmost portion of the subbasin (NCDMR 2022, SJREC GSP Group 2022). This thickening of the Corcoran Clay results in an increasing thickness of the upper aquifer toward the east and south with a corresponding increase in separation between the upper and lower aquifers.

The upper aquifer includes younger and older alluvium and the upper portion of the Tulare Formation downward to the top of the Corcoran Clay. The depth of the upper aquifer ranges between 150 and 350 feet. The upper aquifer is semi-confined due to interbedded clay layers and lenses which create localized areas of aquifer confinement and perched groundwater. The confined, lower aquifer occurs within the Tulare Formation and ranges in depth from about 1,100 to 1,200 feet at the southern end of the subbasin to approximately 600 feet at the northern end.

There are no faults underlying the Delta-Mendota Subbasin that impact groundwater levels or groundwater flow in the upper and lower aquifers (DWR 2006). The groundwater flow direction in the upper and lower aquifers is generally to the northeast, with the exception of an apparent groundwater divide east of Los Banos where groundwater flow in the upper and lower aquifers is to the south and southwest toward a large pumping center in the Panoche Water District service area near the Merced and Fresno County line (NCDMR 2022).



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Notes
1. Coordinate System: NAD, 1983, StatePlane, California, ILL, FIPS, 0403, Feet
2. Data Source: California Department of Water Resources 2023, Stantec 2023
3. Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCO, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

-  Project Area (649.91 acres)
-  Groundwater Subbasins

0 6 12 Miles
(At original document size of 8.5x11)
1:800,000



Project Location Merced County, CA
Prepared by PG on 2024-07-26
TR by TR on 2024-07-26

Client/Project Longroad Energy Management, LLC
Zeta Solar and Battery Energy
Storage System Project
Figure No. 4

Title
Groundwater Subbasins

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Groundwater Supply

Storage Capacity

Estimations of the total storage capacity of the Delta-Mendota Subbasin were calculated by DWR in 1995 and range between 30,400,000 AF to a depth of 300 feet and 81,800,000 AF to the base of fresh water using an estimated specific yield of 11.8 percent. These same calculations give an estimate of 26,600,000 AF of groundwater in storage to a depth of 300 feet (DWR 2006).

Stored groundwater in the Delta-Mendota Subbasin declined by 530,400 AF between 2013 and 2020 and by 624,000 AF in the upper aquifer and 375,000 AF in the lower aquifer between 2003 and 2012 (SJREC GSP Group 2022). By implementing a variety of mitigation measures (including measures to minimize significant and unreasonable land subsidence) and accounting for climate change factors, the 2014–2070 projections indicate a deficit of 150,000 AF in the upper aquifer and 600,000 AF in the lower aquifer (SJREC GSP Group 2022). As a result, the sustainable yield is 403,000 AFY for the upper aquifer and 101,000 AFY for the lower aquifer. Well yields in the Delta-Mendota Subbasin range from 490 to 2,415 gpm in the upper aquifer, and from 1,147 to 2,010 gpm in the lower aquifer (SJREC GSP Group 2022).

Groundwater Production

Historic (2003–2012) groundwater production in the NCDMR averages 108,000 AFY (NCDMR 2022). Current (2013) groundwater production in the NCDMR is 124,000 AF. Projected groundwater production in the NCDMR is estimated to be 138,000, 137,000 and 102,000 AFY from 2014 to 2070, under the baseline, climate change, and climate change with implementation of PMAs scenarios, respectively (NCDMR 2022).

Historic (2003–2012) groundwater production in the Delta-Mendota Subbasin averages 409,200 AFY (NCDMR 2022). Current (2013) groundwater production in the Delta-Mendota Subbasin is 528,000 AF. Groundwater production in the Delta-Mendota Subbasin is projected to average 404,900 AFY from 2014 to 2070 under the climate change with implementation of PMAs scenario (SJREC GSP Group 2022).

Groundwater Recharge

Historic (2003–2012) and current (2013) average annual groundwater recharge in the NCDMR is estimated to be 136,000 AF and 114,000 AF, respectively (NCDMR 2022). Projected average annual groundwater recharge in the NCDMR is estimated to be 169,000 AFY and 181,000 AFY from 2014 to 2070 under the three scenarios previously described for this subbasin (NCDMR 2022).

Historic (2003–2012) and current (2013) average annual groundwater recharge in the Delta-Mendota Subbasin is estimated to be 704,100 AFY and 742,000 AF, respectively. Projected average annual groundwater recharge in the Delta-Mendota Subbasin is estimated to be 761,895 AFY from 2014 to 2070 under the two scenarios previously described for this subbasin (SJREC GSP Group 2022).



Merced Subbasin

Geography and Climate

The Merced Subbasin borders the Delta-Mendota Subbasin on a portion of its eastern boundary. The Merced Subbasin is bounded by the Merced River on the north, the crystalline basement rocks of the Sierra Nevada Mountains foothills on the east, the Chowchilla River (Merced-Madera County line) and Chowchilla Water District boundary on the south and the San Joaquin River on the west (MIUGSA 2022). Average annual rainfall in the Merced Subbasin averages 11 to 13 inches increasing eastward (DWR 2004). Surface water in the Merced Subbasin drains southwest and west to the San Joaquin River from watersheds with headwaters in the Sierra Nevada Mountains. These include the larger Merced and Chowchilla Rivers and a series of smaller drainages including Bear, Owens, and Dutchman Creeks (MIUGSA 2022).

Geology and Hydrogeology

In the Merced Subbasin, the Tulare Formation contains the Corcoran Clay or E-Clay, a laterally extensive diatomaceous clay or silty clay deposit of lacustrine origin. In the eastern Merced Subbasin, the Corcoran Clay is part of the Turlock Lake Formation (Marchand and Allwardt 1981). The Corcoran Clay thins in the eastern Merced Subbasin, creating a shallow, unconfined aquifer separated from the intermediate confined aquifer and the deeper Mehrten Formation aquifer (NCDMR 2022).

In the eastern Merced Subbasin, the Tulare Formation correlatives, Laguna and Turlock Lake Formations, overlie the Miocene to late Pliocene age Mehrten Formation (Marchand and Allwardt 1981). The Mehrten Formation consists of fluvial volcanoclastic conglomerate, breccia, sandstone, siltstone, and claystone. The formation ranges from 200 to 500 feet bgs (Page 1977) and may be more than 700 feet thick (Page and Balding 1973). The base of fresh water in the Merced Subbasin, defined as a TDS concentration of 2,000 mg/l, is 1,200 feet (Page 1977).

There are no major faults or other geologic structures that impact groundwater levels or groundwater flow in the underlying aquifers in the Merced Subbasin (NCDMR 2022). The only subsurface geologic feature is the northwest-trending Kings Canyon Lineament (Bartow 1985, California Geological Survey 2010). The Kings Canyon Lineament coincides with an inferred fault based on offset of the post-Eocene unconformity and the basement surface (Bartow 1985). The California Geological Survey (CGS 2010) identifies the Kings Canyon Lineament as a pre-Quaternary fault.

Groundwater Supply

Storage Capacity

Estimations of the total storage capacity of the Merced Subbasin were calculated by DWR in 1995 and range between 21,000,000 AF at 300 feet and 47,600,000 AF at the base of fresh water, using an estimated specific yield of 9 percent. These same calculations give an estimate of 15,700,000 AF of stored groundwater at 300 feet (DWR 2004). Williamson et al. (1989) estimated stored groundwater at 1,000 feet to be 37,000,000 AF in 1961. In 2015, MIUGSA (2022) estimated stored groundwater to be 45,300,000 AF based on the Merced Water Resources Model. The availability of groundwater from the



Merced Subbasin is managed by the revised Merced Subbasin GSP approved by the DWR on August 4, 2023 (DWR 2023b).

Groundwater in storage in the Merced Subbasin has declined 1,920,000 AF between 2006 and 2015 (MIUGSA 2022). MIUGSA estimated the projected cumulative change in stored groundwater between 2014 and 2090 to be zero. This estimate accounted for climate change, reduced groundwater demand, and declining groundwater production, to find a sustainable yield. The estimated sustainable yield is 570,000 AFY (MIUGSA 2022). Well yields range from 690 to 4,160 gpm in the intermediate confined aquifer within the older alluvium (Page 1977). Well yields range from 2,000 to 3,000 gpm in the confined, lower Tulare Formation (i.e., Laguna Formation) (Page 1977). In the Mehrten Formation, well yields as high as 3,400 gpm have been reported (Page 1977).

North San Benito Subbasin

Geography and Climate

The North San Benito Subbasin is located within the Gilroy-Hollister Valley Basin (DWR 118) within the Pajaro River Watershed (SBCWD GSA 2021) and is bordered on the north by the Llagas Area Subbasin and to the southwest by the San Benito River Valley Subbasin. These basins are hydrologically connected with groundwater flow across the boundary (SBCWD GSA 2021). The subbasin includes the main tributaries to the Pajaro River including the San Benito River, Tres Pinos Creek, and Pacheco Creek, which are dry over most of their lengths for much of the year, flowing mostly during wet winter conditions. The subbasin consists of a series of connected valleys and uplands and is characterized by unconsolidated to semi-consolidated sediments. The subbasin is bordered by the Diablo Range to the east, northeast, and southeast; the Gabilan Range in portions of the west; and the Santa Cruz Mountains to the northwest (DWR 2006; SBCWD GSA 2021).

In the North San Benito Subbasin, historic rainfall data is available for the City of Hollister from 1874 through 1996 and through the CIMIS San Benito station from 1995 to present. The long-term average precipitation is 13.4 inches per year (in/yr) from 1922 to 2018 (SBCWD GSA 2021). San Benito County receives an average annual rainfall of 7 in/yr in the eastern portion of the county and up to 27 in/yr in the higher elevations to the south (SBCWD et al. 2021). Precipitation is considered important for the overall water balance of the area, with local precipitation having a larger effect by volume on the groundwater basin (Todd, 2021b).

Geology and Hydrogeology

The North San Benito Subbasin boundaries are defined by geologic contacts (a boundary separating one rock body from another) with impermeable consolidated rocks. Faults, such as the Calaveras Fault, are partial barriers to groundwater, offset bedrock, and affect the local depth of the Basin (SBCWD GSA 2021).

Due to the heterogeneity, regional zones of low or high permeability have not been distinguished. The valley portions contain unconsolidated alluvial deposits—clay, silt, sand, and gravel—that store and transmit groundwater. These geologic deposits underlie some upland areas in the southern portion of the Basin but are more consolidated and less permeable than in the valley areas. The principal aquifers are 0



to 300 feet thick and include the unconsolidated alluvial deposits in the valley areas. Secondary aquifers include the older, less permeable deposits that underlie the valleys at depth, crop out in portions of the valley areas, and occur in upland areas with thickness up to several thousand feet (SBCWD GSA 2021).

Groundwater elevations are estimated to have been at historical highs prior to 1913 (SBCWD GSA 2021). In general, groundwater in the basin flows from the southeast and eastern portions of the subbasin toward the western and northwestern portions of the basin to the Pajaro River. However, general flow directions have been reversed in the Bolsa Subbasin due to groundwater pumping; groundwater in the Bolsa Subbasin near the Pajaro River flows southeast toward lower water levels (SBCWD GSA 2021).

Groundwater Supply

Storage Capacity

Surface water and groundwater in the North San Benito subbasin is supplemented by imported CVP water. With development of irrigated agriculture and intensification of groundwater pumping, groundwater elevations in valley areas of the subbasin generally decreased from the 1940s to the 1970s, indicating a state of overdraft. At the time, the subbasin relied solely on groundwater (although recharged from local reservoirs) and groundwater elevations in many wells reached historical lows. In 1987, SBCWD began importation of CVP water and groundwater elevations began to increase. The result of CVP imports and SBCWD managed aquifer recharge programs was significant groundwater recovery, especially in the Hollister and San Juan valleys where imported water is delivered. With groundwater elevation recovery, management of the subbasin has shifted from recovery to maintenance and local sustainable management of groundwater (SBCWD GSA 2021).

The annual groundwater reports prepared by SBCWD indicate that groundwater in storage has been stable since 1987 when SBCWD began receiving CVP water supplies (SBCWD GSA 2021). In 2021, the GSP completed an analysis of long-term groundwater in storage. The study concluded, “The average annual decline in storage in the Future period is small relative to total inflows and outflows and is probably within the range of uncertainty of the overall water balance”. Furthermore, the model projection shows the change in storage to be positive in above normal and wet years and negative in normal, dry and critically dry years (SBCWD GSA 2021). The GSP concluded the North San Benito Subbasin is not in overdraft and sufficient groundwater in storage remains in the subbasin to accommodate additional dry conditions with limited imported water (SBCWD GSA 2021). Results of projection modeling showed the average annual change in groundwater in storage was essentially zero (± 1 percent for Hollister, San Juan, and Bolsa Management Area; 3 percent for the Southern Management Area), which was within the range of uncertainty for the model.

Groundwater Budget

Groundwater from the North San Benito Subbasin is managed by the North San Benito Subbasin GSP (DWR 2023c). Groundwater recharges via reservoirs along the San Benito River (which released 9,472 AF into groundwater in 2020) and Tres Pinos Creek (2,037 AFY). In addition, local streams supply water for groundwater recharge, notably Pacheco Creek (SBCWD GSA 2021). The CVP also imports surface water into the subbasin which is delivered to municipal water purveyors and agricultural customers (4,391 AFY in 2020) and represents 70 percent of the total supply (SBCWD GSA 2021). The North San Benito



Subbasin was divided into four management areas to facilitate development of water budgets and include: Southern Management Area, Hollister Management Area, San Juan Management Area and Bolsa Management Area. The average annual water budgets for the management areas are presented in SBCWD GSA (2021) Tables 5-6, 5-7, 5-8 and 5-9, respectively.

Groundwater recharge rates fluctuate over the surface of the basin. Irrigation water and rainfall contribute to dispersed recharge over a broad area. Subsurface inflow originates from surrounding consolidated formations and the Llagas Subbasin. Groundwater is also recharged via percolation from streams and ponds, including wastewater treatment plant ponds. Recharge is also augmented by surface water imports via SBCWD's Managed Aquifer Recharge programs.

Wells represent the primary source of groundwater discharge in the subbasin, followed by natural outflow of groundwater into streams. The primary groundwater discharge points are located at the lower ends of the Pajaro and San Benito Rivers as they approach the northwestern end of the basin and enter the bedrock canyon leading to the coast boundary (SBCWD GSA 2021).

4.1.6 ARE THERE SUFFICIENT SUPPLIES TO SERVE THE PROJECT OVER THE NEXT 20 YEARS?

The next step in the WSA process is to assess available water supplies, including the availability of these supplies in all water year conditions over a 20-year planning horizon, and an assessment of how these supplies relate to Project-specific and cumulative demands over that same 20-year period. To be consistent with SB 610, this WSA considers the 20-year period and the project lifespan.

Section 10910(c)(3) of the Water Code states, "If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses."

Section 10910(c)(4) of the Water Code states, "If the city or county is required to comply with this part pursuant to subdivision (b), the water assessment for the Project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the Project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the Project, in addition to existing and planned future uses including agricultural and manufacturing uses."

Groundwater

As noted previously, there is no public water system that serves or would serve the Project; consequently, there is no UWMP that accounts for the proposed Project water demand. As a result, this section provides additional analysis of long-term Project water demands based on projected water budgets in each groundwater basin to further determine whether each subbasin has sufficient water supplies



available for the Project, namely by comparing Project water demands to projected budgets in each subbasin.

The following sections provide projected groundwater budgets for the Project in the Delta-Mendota, Merced, and North San Benito subbasins, respectively, for water year (WY)2025 and for the projected WY2067. The WY consists of the period October 1 through September 30 of the following year and is identified by the end year. Project build-out or project completion is equivalent to the 43-year life of the Project is 2068, which would be WY2067 for the purposes of this WSA.

Delta-Mendota Subbasin

In the Delta-Mendota Subbasin, the estimated WY2025 groundwater budget inflow and outflow are 852,000 AF and 616,000 AF, respectively. Single dry [water] year inflow and outflow correspond to WY2033 and are 665,000 AF and 893,000 AF, respectively. Multiple dry [water] year inflow and outflows correspond to WY2026, 2027 and 2028 as presented in Table 3. During this period the groundwater balance is negative as outflow exceeds inflow.

Table 3. Groundwater Budgets in the Delta-Mendota Subbasin Accounting for Implementation of PMAs and Climate Change Factors

Current Source	Water Year (WY2025)	Single Dry Water Year (WY2033)	Multiple Dry Water Years		
			Year 1 (WY2026)	Year 2 (WY2027)	Year 3 (WY2028)
Groundwater Inflow	852,000	665,000	716,000	737,000	656,000
Groundwater Outflow	616,000	893,000	903,000	897,000	899,000
Groundwater Budget	236,000	(228,000)	(187,000)	(160,000)	(243,000)

Source: SJREC GSP Group 2022 Table CC-15

Note: All units are in acre-feet

In the NCDMR, the estimated WY2025 groundwater budget inflow and outflow are 241,000 AF and 176,000 AF, respectively (NCDMR 2022). Single dry [water] year inflow and outflow correspond to WY2033 and are 144,000 AF and 185,000 AF, respectively. Multiple dry [water] year inflow and outflows correspond to WY2026, 2027 and 2028 as presented in Table 4. During this period the groundwater balance is negative as outflow exceeds inflow.



Table 4. Groundwater Budgets in the Northern and Central Delta-Mendota Region Accounting for Implementation of PMAs and Climate Change Factors

Current Source	Water Year (WY2025)	Single Dry Water Year (WY2033)	Multiple Dry Water Years		
			Year 1 (WY2026)	Year 2 (WY2027)	Year 3 (WY2028)
Groundwater Inflow	241,000	144,000	164,000	172,000	158,000
Groundwater Outflow	176,000	185,000	180,000	183,000	185,000
Groundwater Budget	65,000	(41,000)	(16,000)	(11,000)	(27,000)

Source: NCDMR GSP (NCDMR 2022 Table 5-33)

Note: All units are in acre-feet

Table 5 shows that at assumed project completion in the Delta-Mendota Subbasin. In WY2067, a projected wet [water] year, groundwater inflow exceeds outflow and results in a positive water budget. However, in the single dry [water] year (WY2033) and multiple dry [water] year period (WY2026–2028), the water budget is negative.

Table 5. Future (Water Year 2067) Groundwater Budget Versus Project Water Demand at Build-Out in the Delta-Mendota Subbasin

Current Source	WY2067	Single Dry Water Year (WY2033)	Multiple Dry Water Years		
			Year 1 (WY2026)	Year 2 (WY2027)	Year 3 (WY2028)
Groundwater Inflow	791,000	665,000	716,000	737,000	656,000
Groundwater Outflow	653,000	893,000	903,000	897,000	899,000
Subtotal Groundwater Budget	138,000	(228,000)	(187,000)	(160,000)	(243,000)
Estimated Construction and Decommissioning Water Demand (Zeta) ²	75	0	0	0	0
Estimated Annual O&M Water Demand (Zeta) ²	0	3	3	3	3
Estimated Surplus/ (Shortfall)	137,925)	(228,003)	(187,003)	(160,003)	(243,003)

Source: SJREC GSP Group 2022 Table CC-15

Key: WY = Water Year

Notes:

1. All units in acre-feet
2. For the purposes of the calculations herein, the estimated total water demand during operation of the Project has been rounded from 2.77 AFY to 3 AFY of which 2.71 AFY is for non-potable use and 0.06 AFY is for potable use. Construction water demand is estimated at 75 AFY for two years and decommissioning water demand is estimated at 75 AF for one year. In WY2025, the Project water demand is for construction only. In WY 2026, 2027 and 2028, the Project water demand is for O&M only. In WY2067, the Project water demand is for decommissioning only.



Table 6 shows that at assumed project completion in the NCDMR. In WY2067, a projected wet [water] year, groundwater inflow exceeds outflow and results in a positive water budget. Conversely, in the single dry year (WY2033) and multiple dry [water] year period (WY2026–2028), the water budgets are negative.

Table 6 Future (Water Year 2067) Groundwater Budget Versus Project Water Demand at Build-Out in the Northern and Central Delta-Mendota Region

Current Source	WY2067	Single Dry Water Year (WY2033)	Multiple Dry Water Years		
			Year 1 (WY2026)	Year 2 (WY2027)	Year 3 (WY2028)
Groundwater Inflow	241,000	144,000	164,000	172,000	158,000
Groundwater Outflow	166,000	185,000	180,000	183,000	185,000
Subtotal Groundwater Budget	75,000	(41,000)	(16,000)	(11,000)	(27,000)
Estimated Construction and Decommissioning Water Demand (Zeta) ²	75	0	0	0	0
Estimated Annual O&M Water Demand (Zeta) ²	0	3	3	3	3
Estimated Surplus/ (Shortfall)	74,925	(41,003)	(16,003)	(11,003)	(27,003)

Source: NCDMR 2022, Table 5-33

Key: WY = Water Year

Notes:

1. All units in acre-feet

2. For the purposes of the calculations herein, the estimated total water demand during operation of the Project has been rounded from 2.77 AFY to 3 AFY of which 2.71 AFY is for non-potable use and 0.06 AFY is for potable use. Construction water demand is estimated at 75 AFY for two years and decommissioning water demand is estimated at 75 AF for one year. In WY2025, the Project water demand is for construction only. In WY 2026, 2027 and 2028, the Project water demand is for O&M only. In WY2067, the Project water demand is for decommissioning only.

While Tables 3 through 6 show project water at the time of project completion, **Appendix A** provides additional considerations to understand groundwater budgets within the entire Delta-Mendota Subbasin and NCDMR GSP area across 5-year increments as well as cumulatively over the lifespan of the project. This information provides additional context for how groundwater subbasins trend over time between dry and wet years leading to overdraft and surplus conditions.

Tables A-1 and A-2 show the estimated changes in groundwater budgets in the Delta-Mendota Subbasin and the NCDMR, respectively. Accounting for Project water demands in five-year increments over the period WY2025-2067. Tables A-3 and A-4 show the estimated annual and cumulative change in groundwater in storage with and without the Project over the 43-year life of the Project in the Delta-Mendota Subbasin and the NCDMR, respectively.

Table A-3 shows that at the end of the Project, WY2067, due to implementation of PMAs in the Delta-Mendota Subbasin, the cumulative change in groundwater in storage has increased an estimated



645,000 AF without the Project and 644,655 with the Project. Likewise, Table A-4 shows that at the end of the Project, WY2067, due to implementation of PMAs in the NCDMR, the cumulative change in groundwater in storage has increased an estimated 408,000 AF without the Project and 407,655 with the Project. The incremental impact of the Project on the cumulative change in groundwater in storage over the period WY2025-2067 is 0.05 percent for the Delta-Mendota Subbasin and 0.08 percent for the NCDMR.

Merced Subbasin

In the Merced Subbasin, water budgets were developed using the Merced Water Resources Model (MercedWRM) as follows (MIUGSA et al 2022):

- Historical period - WY2006-2015
- Current period (Current Conditions Baseline) - WY1969-2018 (50-year hydrology). Note that while 2018 is no longer “current”, the MercedWRM defines this time period as such and is thus carried forward into the WSA as reflected in the source.
- Projected period (Projected Conditions Baseline) WY1969-2018 with WY2015-2040 called the implementation period based on current population, land use and water supply and demand, and planning period (WY2041-2090) based on projected population, land use and water supply and demand.
- Sustainable yield period (Projected Conditions Baseline planning period) with reductions in agricultural water demand through reduction in agricultural land use and reduction in urban water demand through reduction in per capita water use.
- Calibrated using hydrology of WY1996-2015

The projected condition water budget indicates average annual inflow and outflow of 723,000 AFY and 805,000 AFY, respectively, for a change in groundwater in storage deficit of 82,000 AFY. The climate change water budget shows an average annual inflow and outflow of 743,000 AFY and 873,000 AFY, respectively, which results in a negative average annual change in groundwater in storage of 130,000 AF. Neither the projected condition nor the climate change water budgets take into account implementation of PMAs. However, the sustainable yield water budget accounts for implementation of PMAs and climate change. In this scenario inflow equals outflow at 702,000 AFY resulting in no net change in groundwater in storage (MIUGSA et al 2022). Table 6 presents the projected condition and climate change water budgets for the groundwater system. Table 7 provides the sustainable yield water budget.



Table 6. Annual Average Water Budgets in the Merced Subbasin for the Projected Condition and Climate Change Scenarios (WY1969–2018)

Current Source	Projected Condition Water Budget	Climate Change Water Budget
Groundwater Inflow	723,000	743,000
Groundwater Outflow	805,000	873,000
Change in Groundwater in Storage	(82,000)	(130,000)

Source: MIUGSA, MIUGSA et al 2022 Table 2-25

Notes: All units in acre-feet

In WY2023 the change in groundwater in storage increased by 177,000 AF based on recent updates to the MercedWRM. According to MIUGSA et al (2022), limitations and uncertainties related to the development of the climate change scenario is that DWRs Water Resource Integrated Modeling System (CalSim II) does not fully simulate local surface water operations. As a result, the model “...may not fully reflect how surface and groundwater basin operations would respond to changes in water demand and availability caused by climate change.” (MIUGSA et al 2022).

Table 7 presents the groundwater budget for the Merced Subbasin for the sustainable condition during the WY2041-2090 with implementation of PMAs and accounting for climate change factors. The groundwater budget is zero due to implementation of demand reduction combined with increased groundwater recharge activities.

Table 7. Projected Annual Average Groundwater Budget in the Merced Subbasin During the Sustainable Yield Period (WY2041-2090) with Implementation of PMAs and Climate Change

Current Source	Sustainable Condition
Groundwater Inflow	702,000
Groundwater Outflow	702,000
Change in Groundwater in Storage	0

Source: MIUGSA et al 2022 Table 2-17

Note: All units in acre-feet

Table 8 presents future water supply versus Project demand in WY2067, in single dry water year (WY2033) and multiple dry water years (WY2026, 2027 and 2028) based on *Merced Groundwater Subbasin Groundwater Sustainability Plan* (MIUGSA et al 2022). The Project Conditions Baseline Implementation Period extends from WY2015 to WY2040, and the Sustainable yield period extends from WY2041 to WY2090 and considers climate change factors and implementation of PMAs to sustainably manage groundwater supplies in the Merced Subbasin (MIUGSA et al 2022). The projected GSP water budgets also consider water demands for municipal purposes at build-out for the cities and unincorporated towns in the Merced Subbasin.



Table 8. Projected Annual Average Groundwater Budget in the Merced Subbasin During the Projected Condition Baseline Implementation Period (WY2015-2040) and Sustainable Yield Period (WY2041-2090) with Implementation of PMAs and Climate Change Factors at Build-Out

Current Source	Water Year (WY2067)	Single Dry Water Year (WY2033)	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Groundwater Inflow	702,000	723,000	723,000	723,000	723,000
Groundwater Outflow)	702,000	805,000	805,000	805,000	805,000
Groundwater Budget	0	(82,000)	(82,000)	(82,000)	(82,000)
Estimated Construction and Decommissioning Water Demand (Zeta) ²	75	0	0	0	0
Estimated Annual O&M Water Demand (Zeta) ²	0	3	3	3	3
Estimated Surplus/(Shortfall)	(75)	(82,003)	(82,003)	(82,003)	(82,003)

Source: MIUGSA 2022 Table 2-17

Key: WY = Water Year

Notes:

1. All units in acre-feet per year (AFY)
2. For the purposes of the calculations herein, the estimated total water demand during operation of the Project has been rounded from 2.77 AFY to 3 AFY of which 2.71 AFY is for non-potable use and 0.06 AFY is for potable use. Construction water demand is estimated at 75 AFY for two years and decommissioning water demand is estimated at 75 AF for one year. In WY2025, the Project water demand is for construction only. In WY 2026, 2027 and 2028, the Project water demand is for O&M only. In WY2067, the Project water demand is for decommissioning only.

Table 8 also shows that, based on the average annual projected condition water budget of -82,000 AFY, the estimated project water demands for a portion of the project O&M activities are additive to this deficit. In WY2067, when the Project is decommissioned, there is an added water demand of 75 AF to the sustainable groundwater budget (calculated as a zero balance) for a deficit of -75 AF. Construction and decommissioning water demands are short-term, two years and one year, respectively, and would not impact long-term water budgets or outflows. Operational water demand of approximately 3 AFY is considered negligible compared to the annual average projected condition water budget (0.0037 percent increase). Consequently, there would be only a minimal change to the projected condition baseline and sustainable yield groundwater budgets and only a minimal impact on the management of groundwater supplies in the Merced Subbasin for this use. There would be sufficient water supplies in the Merced Subbasin for the Project in addition to existing and planned future uses.

There is a lack of quantitative surface water and groundwater data for the Merced Subbasin, which limits the ability to create a detailed groundwater budget. According to the Merced Subbasin GSP 2023 Annual Report (MIUGSA et al 2024), the established current average annual rate of groundwater overdraft based on the historical period WY2006-2015 is estimated to be 192,000 AF. The Merced Subbasin GSP (MIUGSA et al 2022) acknowledges a conservative near-term target of reducing groundwater pumping or



increasing recharge by 175,000 AFY to achieve the estimated sustainable yield of 570,000 AFY beginning in WY2041. Based on the foregoing, the estimated Project water demand of 345 AF over the 43-year life of the Project may incrementally impact achievement of the sustainable yield. However, the potential total long-term impact is considered minimal and is estimated to be 0.06 percent of the sustainable yield.

North San Benito Subbasin

Table 9 presents the groundwater budgets for the North San Benito Subbasin for the current (WY 2015–2017) and future (WY2018–2068) condition. The groundwater budgets shown are the sum of the groundwater budgets for the four management areas in the North San Benito Subbasin which are presented in Tables 5-6 through 5-9 in SBCWD GSA (2021). The future condition is based on the hydrologic conditions during the 50-year period WY1925–1953 and WY1982–2002. In the current water year, the groundwater budget is 24,734 AF. Note that while 2017 is no longer “current”, the terminology is used in how it is reflected in the source. In the future scenario the groundwater budget is negative by 855 AFY. However, the groundwater budget fluctuates between positive and negative depending on the water year type. For example, in wet and above normal years the groundwater budget is positive, and in normal, dry and critically dry years the groundwater budget is negative (SBCWD GSA 2021).

Table 9. Current and Future Average Annual Groundwater Budgets in the North San Benito Subbasin

Current Source	Current Water Year (WY2015–2017)	Future (WY2018–2068)
Groundwater Inflow	160,879	134,337
Groundwater Outflow	136,145	135,192
Groundwater Budget	24,734	(855)

Source: SBCWD GSA (2021) Tables 5-6 through 5-9

Note: All units are in acre-feet

Table 10 presents average annual groundwater budgets for current, single dry and multiple dry water years based on water type groundwater budgets over the period WY1975–2017 in the North San Benito Subbasin. The period WY1999–2002 was selected because it represents the most recent four-year period of dry water year conditions.



Table 10. Current and Historical Average Annual Water Budgets for WY1975–2017 in the North San Benito Subbasin

Current Source	Current Water Year (WY2015–2017)	Single Dry Water Year (WY1999)	Multiple Dry Water Years		
			Year 1 (WY2000)	Year 2 (WY2001)	Year 3 (WY2002)
Groundwater Inflow	160,879	101,867	101,867	101,867	101,867
Groundwater Outflow	136,145	132,675	132,675	132,675	132,675
Groundwater Budget	24,734	(30,808)	(30,808)	(30,808)	(30,808)

Source: SBCWD GSA (2021) Tables 5-6 through 5-9 and Table 5-10

Notes: All units are in acre-feet

Table 11 presents the future (WY2018–2068) groundwater budget for the North San Benito Subbasin versus the Project water demand at project build-out or completion. The total groundwater inflows and outflows shown in Table 11 are the sum of these values presented in North San Benito Subbasin GSP (SBCWD GSA 2021). The values shown in Table 11 are average annual groundwater budgets. The future groundwater budget without the Project water demand is -855 AFY. With the Project, the groundwater budget deficit increases to -930 AFY (construction/decommissioning) or -858 AFY (operation).

Table 11. Future (WY2018–2068) Groundwater Budget Versus Project Water Demand at Build-Out in the North San Benito Subbasin

Current Source	WY2018–2068	Single Dry Water Year (WY2018–2068)	Multiple Dry Water Years		
			Year 1 (WY2018–2068)	Year 2 (WY2018–2068)	Year 3 (WY2018–2068)
Groundwater Inflow	134,337	134,337	134,337	134,337	134,337
Groundwater Outflow	135,192	135,192	135,192	135,192	135,192
Subtotal Groundwater Budget	(855)	(855)	(855)	(855)	(855)
Estimated Construction and Decommissioning Water Demand (Zeta) ²	75	75	0	0	0
Estimated Annual O&M Water Demand (Zeta) ²	0	0	3	3	3
Estimated Surplus/ (Shortfall)	(930)	(930)	(858)	(858)	(858)

Source: SBCWD GSA (2021) Tables 5-6 through 5-9. The totals of groundwater inflow and outflow represent the sum of the same values for the four management areas.

Key: WY = Water Year

Notes:

1. All units in acre-feet



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2. For the purpose of the calculations herein, the estimated total water demand during operation of the Project has been rounded from 2.77 AFY to 3 AFY of which 2.71 AFY is for non-potable use and 0.06 AFY is for potable use. Construction water demand is estimated at 75 AFY for two years (WY2025 and 2026) and decommissioning water demand is estimated at 75 AF for one year (WY2067). Future WY2018-2068 and Single Dry Water Year (WY2018-2068) is assumed to correspond to WY2025. As such, the WY2025 Project water demand is for construction only. Multiple Dry Water Years is assumed to correspond to a Project operational period (WY2027-2066); therefore, the Project water demand is for O&M only.

The North San Benito Subbasin is not in overdraft or recovering from overdraft (SBCWD GSA 2021).

The Project non-potable water demand of 75 AFY over two years of construction and one year of decommissioning could temporarily increase the groundwater budget deficit by 8.8 percent to -930 AF in each of those three years. However, construction water demands would cease after the construction period and Project water demand would decrease significantly to less than 3 AFY. The Project O&M water demand of 3 AFY could increase the annual groundwater budget deficit by 0.35 percent to -858 AF. The groundwater budget in the North San Benito Subbasin fluctuates between positive and negative depending on the water year type, and Project water demand will have a minor influence on this process. For example, in wet and above normal years the groundwater budget is positive, and in normal, dry and critically dry years the groundwater budget is negative (SBCWD GSA 2021).

Implementation of PMAs such as the expansion of Pacheco Dam (San Luis Reservoir) may improve water supply reliability with respect to imported CVP water supplies for direct use and/or recharge with a concomitant reduction in groundwater pumping in the North San Benito Subbasin.

SLWD Supply Sources

SLWD supplies imported CVP surface water under contract with the United States Bureau of Reclamation (Contract No. 14-06-200-7773A-IR1-P for 125,080 AFY), from water transfers, banked water supplies (i.e., Meyers Family Farms), and supplemental water purchased from other water entities. The SLWD does not own or operate any groundwater production wells (SLWD 2021).

To the extent imported CVP water supplies are available to the Project from SLWD. Table 12 summarizes operational and construction/decommissioning scenarios for the current water supply year (2020), a single dry year, and multiple dry years.

Table 12 Anticipated Project Construction and Annual Operation Water Demand in SLWD Supply and Demand

	Current (2020) Water Supply	Single Dry Year (2020)	Multiple Dry Water Years (WY2012–2014)		
			Year 1	Year 2	Year 3
Groundwater ¹	12,000	12,000	12,000	12,000	12,000
Imported Surface Water (CVP), and Water Transfers (if applicable) ^{1,2}	75,819	75,819	92,889	81,217	63,524
Precipitation ³	211,000	211,000	112,000	149,000	127,000
Total Supply (SLWD)	298,819	298,819	216,889	242,217	202,524



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	Current (2020) Water Supply	Single Dry Year (2020)	Multiple Dry Water Years (WY2012–2014)		
			Year 1	Year 2	Year 3
Total Demand (SLWD) ⁴	91,895	91,895	91,895	91,895	91,895
Total Construction Water Demand (Zeta) ⁵	75	75	0	0	0
Total Annual Operational Demand (Zeta) ⁶	0	0	3	3	3
Total Decommissioning Water Demand (Zeta) ⁷	0	0	0	0	0
Total Project Demand (Life of Project) ⁸	75	75	3	3	3
Total SLWD and Project Demand (Construction/Decommissioning)	91,970	91,970	91,895	91,895	91,895
Total SLWD and Project Demand (Operation)	91,895	91,895	91,898	91,898	91,898
Estimated Surplus/(Shortfall) (Construction/Decommissioning)	206,849	206,849	124,994	150,322	110,629
Estimated Surplus/(Shortfall) (Operation)	206,924	206,924	124,991	150,319	110,626

Source: NCDMR 2022

Notes:

1. Estimated groundwater production in the SLWD service area based on Table 2 in SLWD 2021 and held constant for all years due to lack of SLWD annual production data for other years.
2. Imported water supplies for the period WY 2011/12 through WY2020/21 from Table 8 in SLWD 2021) and based on Water Year Hydrologic Type in Table 5-11 in NCDMR (2022)
3. Precipitation data from Table 5-12 (2012), Table 5-23 (2013) and Table 5-26 (2014 and 2020) in NCDMR (2022)
4. Water demand in the SLWD service area from Table 6 in SLWD (2021) and held constant for all years due to lack of SLWD annual demand data for other years.
5. Zeta Solar estimated annual construction water demand.
6. Zeta Solar estimated annual O&M water demand of 2.77 acre-feet per year rounded to 3 acre-feet per year.
7. Zeta Solar estimated decommission water demand.
8. Total life of Project includes 2 years of construction (150 AF), 40 years of operation (120 AF), and one year of decommissioning (75 AF).

Table 12 shows a scenario where surface water could be used instead of groundwater to support project construction and/or operational demand. In order to utilize this option, a Water Supply Agreement would be signed with SLWD if they make a determination they are able to supply non-potable water to the Project.

Although the *San Luis Water District 2020 Water Management Plan (2020 Criteria)* (SLWD 2021) does not specifically account for the water demand of this Project, SLWD has a current contract to receive 125,080 AFY of CVP water. In the event SLWD cannot provide this amount, SLWD has other sources of water that would be available for the Project. For example, in 2020 SLWD delivered 55,354 AF of transferred, supplemental water to agricultural users from a variety of alternative sources (SLWD 2021). SLWD could also purchase CVP water from one or more of the San Joaquin River Exchange Contractors



with pre-1913 water rights on the San Joaquin River because these sources typically receive most or all of their annual CVP allotments (Congressional Research Service 2024). If SLWD purchases supplemental water on behalf of the Project, it would deliver it via truck to the Project site. The Project may also source surface water from another water district or private landowner in the area from their existing sources. In that scenario, Project water demand would replace existing demand and would not result in increased surface water use.



5 Conclusions

As discussed herein, water for the Project would be produced from off-site groundwater well(s) and trucked to the Project site, or it would be purchased from the SLWD and trucked to the Project site. For the purposes of this WSA, water supply availability and reliability for the proposed Project was evaluated over a 20-year planning horizon and lifespan of the project, and with consideration to varying climatic (drought) scenarios, based upon the extent of available data. Three distinct types of Project water demands were considered (Table 1):

- non-potable construction water demand of 75 AFY over two years, and non-potable decommissioning water demand of 75 AF over a one-year period;
- non-potable O&M water demand of 2.71 AFY over 40 years and,
- potable O&M water demand of 0.06 AFY over 40 years.

Non-potable water would be sourced from groundwater and/or from SLWD supplies, which include local groundwater; however, potable water would only be sourced from groundwater, as SLWD is not able to provide potable water for new customers.

This analysis considers the ability of each Subbasin to manage its water budget and reduce overdraft conditions over the long-term through increased recharge and/or reduced groundwater pumping, as outlined in the corresponding GSPs. Potential water sources and availability are as follows:

Purchased from SLWD. SLWD projects having surplus water supplies available under all considered conditions. Although the SLWD does not provide potable water to new customers, non-potable water could be purchased from SLWD and trucked to the Project site during construction and/or operation. Should water for the project be purchased from SLWD, a Water Supply Agreement would be signed with SLWD to document they are able to supply non-potable water to the Project. Based on existing projections, sufficient supply would be available through SLWD sources to support the Project.

Produced from a new or existing private well in local groundwater basins (Delta-Mendota Subbasin, Merced Subbasin, and North San Benito Subbasin): The Delta-Mendota and Merced Subbasins are currently in overdraft conditions, but recovering from overdraft through the implementation of GSPs, which provide direction for sustainable groundwater management through PMAs to address overdraft. The North San Benito Subbasin is not currently overdrafted; this subbasin is also being managed under a GSP to improve groundwater storage and improve long-term reliability. Due to the small size of the Project's operational demands (3 AFY), and the effective implementations of PMAs defined in the subbasins' respective GSPs, the proposed Project would not impede recovery of the subbasins from overdraft conditions, or the achievement of sustainable conditions through implementation of the GSPs. The Project would not affect the ability of each subbasin to avoid undesirable results such as chronic lowering of groundwater levels and significant and unreasonable reduction of groundwater storage.

Appendix A provides additional considerations to understand groundwater budgets within the entire Delta-Mendota Subbasin and NCDMR GSP area across 5-year increments as well as cumulatively over the



lifespan of the project. This information provides additional context for how groundwater subbasins trend over time between dry and wet years leading to deficit and surplus conditions. Table A-3 shows that at the end of the Project, WY2067, due to implementation of PMAs in the Delta-Mendota Subbasin, the cumulative change in groundwater in storage has increased an estimated 645,000 AF without the Project and 644,655 with the Project. Likewise, Table A-4 shows that at the end of the Project, WY2067, due to implementation of PMAs in the NCDMR, the cumulative change in groundwater in storage has increased an estimated 408,000 AF without the Project and 407,655 with the Project. The incremental impact of the Project on the cumulative change in groundwater in storage over the period WY2025-2067 is 0.05 percent for the Delta-Mendota Subbasin and 0.08 percent for the NCDMR. In both scenarios, there are surplus cumulative groundwater conditions, indicating that the basin has sufficient water supplies to meet the Project's water demands in addition to existing and planned uses.

The Merced Subbasin GSP does not provide the same level of quantitative annual data, which limits the ability to create a detailed groundwater budget; however, the GSP acknowledges a conservative near-term target of reducing groundwater pumping or increasing recharge by 175,000 AFY to achieve the estimated sustainable yield of 570,000 AFY beginning in WY2041. Based on the foregoing, the estimated Project water demand of 345 AF over the 43-year life of the Project may incrementally impact achievement of the sustainable yield. However, the potential total long-term impact is considered minimal and is estimated to be 0.06 percent of the sustainable yield.

The groundwater budget in the North San Benito Subbasin fluctuates between positive and negative depending on the water year type, and Project water demand will have a minor influence on this process. The Project non-potable water demand of 75 AFY over two years of construction and one year of decommissioning could temporarily increase the groundwater budget deficit by 8.8 percent to -930 AF in each of those three years. However, construction water demands would cease after the construction period and Project water demand would fall to less than 3 AFY. The Project O&M water demand of 3 AFY could increase the annual groundwater budget deficit by 0.35 percent to -858 AF. While the construction and decommissioning water demand could have a short-term impact on the future groundwater budget depending on the prevailing water year type, the long-term O&M Project water demand would have a minimal impact of the future groundwater budget.

Sufficient water supply is anticipated to be available for the proposed Project during construction and operation over the planning horizon, including with consideration to varying climatic (drought) conditions, from the Delta-Mendota Subbasin (of the SJVGB), Merced Subbasin (of the SJVGB), and/or North San Benito Subbasin (of the Gilroy-Hollister Basin), or from the SLWD.



6 References

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Appendix A Tables A1-A4

Table A.1 Estimated Project Impact to the Projected Water Budget in the Delta-Mendota Subbasin Under Climate Change Factors and PMAs Scenario Water Years 2025–2067

Current Source Water Year Type	WY2025 Wet	WY2030 Shasta Critical	WY2035 Wet	WY2040 Dry	WY2045 Wet	WY2050 Wet	WY2055 Dry	WY2060 Dry	WY2065 Wet	WY2067 Wet
Groundwater Inflow	852,000	665,000	820,000	722,000	799,000	824,000	679,000	656,000	969,000	791,000
Groundwater Outflow	616,000	977,000	611,000	836,000	626,000	632,000	835,000	841,000	786,000	653,000
Subtotal Groundwater Budget	236,000	-312,000	209,000	-114,000	173,000	192,000	-156,000	-185,000	183,000	138,000
Estimated Construction and Decommissioning Water Demand (Project) 2	75	0	0	0	0	0	0	0	0	75
Estimated Annual O&M Water Demand (Project)2	0	3	3	3	3	3	3	3	3	0
Estimated Surplus/Shortfall (-)	235,925	-312,003	208,997	-114,003	172,997	191,997	-156,003	-185,003	182,997	137,925

Source: SJREC GSP Group 2022, Table CC-15

Key: WY = Water Year

Notes:

1. All units in acre-feet (AF)

2. For the purpose of the calculations herein, the estimated water demand during operation of the Project (WY2027-2066) has been rounded from 2.77 AFY to 3 AFY of which 2.71 AFY is for non-potable use and 0.06 AFY is for potable use. Construction water demand is estimated at 75 AF for two years (WY2025 and 2026), and decommissioning water demand is 75 AF for one year (WY2067).



Table A.2 Estimated Project Impact to the Projected Water Budget in the Northern and Central Delta-Mendota Region Under Climate Change Factors and PMAs Scenario Water Years 2025–2067

Current Source Water Year Type	WY2025 Wet	WY2030 Shasta Critical	WY2035 Wet	WY2040 Dry	WY2045 Wet	WY2050 Wet	WY2055 Dry	WY2060 Dry	WY2065 Wet	WY2067 Wet
Groundwater Inflow	241,000	137,000	238,000	157,000	220,000	216,000	161,000	143,000	172,000	241,000
Groundwater Outflow	176,000	251,000	160,000	211,000	183,000	189,000	233,000	196,000	210,000	166,000
Subtotal Groundwater Budget	65,000	-114,000	78,000	-54,000	37,000	27,000	-72,000	-53,000	-38,000	75,000
Estimated Construction and Decommissioning Water Demand (Project) ²	75	0	0	0	0	0	0	0	0	75
Estimated Annual O&M Water Demand (Project) ²	0	3	3	3	3	3	3	3	3	0
Estimated Surplus/Shortfall (-)	64,925	-114,003	77,997	-54,003	36,997	26,997	-72,003	-53,003	-38,003	74,925

Source: NCDMR 2022, Table 5-33

Key: WY = Water Year

Notes:

1. All units in acre-feet (AF)
2. For the purpose of the calculations herein, the estimated water demand during operation of the Project (WY2027-2066) has been rounded from 2.77 AFY to 3 AFY of which 2.71 AFY is for non-potable use and 0.06 AFY is for potable use. Construction water demand is estimated at 75 AF for two years (WY2025 and 2026), and decommissioning water demand is 75 AF for one year (WY2067).



Table A.3 Estimated Impact of Project Water Demands on Cumulative Change in Groundwater in Storage in the Delta-Mendota Subbasin Water Years 2025–2067

Water Year	Water Year Type ¹	Estimated Annual Change in Groundwater in Storage ¹ (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) (AF)	Estimated Annual Project Water Demand (AF)	Estimated Cumulative Project Water Demand (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) with Project (AF)
2025	Wet	220,000	220,000	75	75	219,925
2026	Dry	-225,000	-5,000	75	150	-5,150
2027	Dry	-195,000	-200,000	3	153	-200,153
2028	Dry	-280,000	-480,000	3	156	-480,156
2029	Dry	-280,000	-760,000	3	159	-760,159
2030	Shasta Critical	-334,000	-1,094,000	3	162	-1,094,162
2031	Shasta Critical	-277,000	-1,371,000	3	165	-1,371,165
2032	Wet	319,000	-1,052,000	3	168	-1,052,168
2033	Dry	-271,000	-1,323,000	3	171	-1,323,171
2034	Wet	332,000	-991,000	3	174	-991,174
2035	Wet	217,000	-774,000	3	177	-774,177
2036	Wet	340,000	-434,000	3	180	-434,180
2037	Wet	495,000	61,000	3	183	60,817
2038	Average	177,000	238,000	3	186	237,814
2039	Average	224,000	462,000	3	189	461,811
2040	Dry	-147,000	315,000	3	192	314,808
2041	Dry	-191,000	124,000	3	195	123,805
2042	Average	196,000	320,000	3	198	319,802
2043	Dry	-231,000	89,000	3	201	88,799
2044	Wet	286,000	375,000	3	204	374,796
2045	Wet	173,000	548,000	3	207	547,793



Zeta Solar and Battery Energy Storage System Project Water Supply Assessment
6 References

Water Year	Water Year Type¹	Estimated Annual Change in Groundwater in Storage¹ (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) (AF)	Estimated Annual Project Water Demand (AF)	Estimated Cumulative Project Water Demand (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) with Project (AF)
2046	Dry	-349,000	199,000	3	210	198,790
2047	Dry	-278,000	-79,000	3	213	-79,213
2048	Average	42,000	-37,000	3	216	-37,216
2049	Average	299,000	262,000	3	219	261,781
2050	Wet	214,000	476,000	3	222	475,778
2051	Dry	-283,000	193,000	3	225	192,775
2052	Dry	-265,000	-72,000	3	228	-72,228
2053	Shasta Critical	-417,000	-489,000	3	231	-489,231
2054	Shasta Critical	-368,000	-857,000	3	234	-857,234
2055	Dry	-207,000	-1,064,000	3	237	-1,064,237
2056	Wet	292,000	-772,000	3	240	-772,240
2057	Wet	156,000	-616,000	3	243	-616,243
2058	Average	146,000	-470,000	3	246	-470,246
2059	Wet	247,000	-223,000	3	249	-223,249
2060	Dry	-233,000	-456,000	3	252	-456,252
2061	Wet	353,000	-103,000	3	255	-103,255
2062	Average	198,000	95,000	3	258	94,742
2063	Average	107,000	202,000	3	261	201,739
2064	Dry	-251,000	-49,000	3	264	-49,264
2065	Average	416,000	367,000	3	267	366,733
2066	Wet	128,000	495,000	3	270	494,730
2067	Wet	150,000	645,000	75	345	644,655

AF = acre-feet

WY = water year

1. Data from SJREC GSP Group (2022) Table CC-15



Table A.4 Estimated Impact of Project Water Demands on Cumulative Change in Groundwater in Storage in the Northern and Central Delta-Mendota Region Water Years 2025-2067

Water Year	Water Year Type ¹	Estimated Annual Change in Groundwater in Storage ¹ (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) (AF)	Estimated Annual Project Water Demand (AF)	Estimated Cumulative Project Water Demand (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) with Project (AF)
2025	Wet	60,000	60,000	75	75	59,925
2026	Dry	-43,000	17,000	75	150	16,850
2027	Dry	-35,000	-18,000	3	153	-18,153
2028	Dry	-48,000	-66,000	3	156	-66,156
2029	Dry	-67,000	-133,000	3	159	-133,159
2030	Shasta Critical	-90,000	-223,000	3	162	-223,162
2031	Shasta Critical	-81,000	-304,000	3	165	-304,165
2032	Wet	69,000	-235,000	3	168	-235,168
2033	Dry	-75,000	-310,000	3	171	-310,171
2034	Wet	62,000	-248,000	3	174	-248,174
2035	Wet	68,000	-180,000	3	177	-180,177
2036	Wet	83,000	-97,000	3	180	-97,180
2037	Wet	63,000	-34,000	3	183	-34,183
2038	Average	112,000	78,000	3	186	77,814
2039	Average	99,000	177,000	3	189	176,811
2040	Dry	-74,000	103,000	3	192	102,808
2041	Dry	-81,000	22,000	3	195	21,805
2042	Average	116,000	138,000	3	198	137,802
2043	Dry	-63,000	75,000	3	201	74,799
2044	Wet	64,000	139,000	3	204	138,796
2045	Wet	37,000	176,000	3	207	175,793



Zeta Solar and Battery Energy Storage System Project Water Supply Assessment
6 References

Water Year	Water Year Type¹	Estimated Annual Change in Groundwater in Storage¹ (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) (AF)	Estimated Annual Project Water Demand (AF)	Estimated Cumulative Project Water Demand (AF)	Estimated Cumulative Change in Groundwater in Storage (WY2025-WY2067) with Project (AF)
2046	Dry	-96,000	80,000	3	210	79,790
2047	Dry	-75,000	5,000	3	213	4,787
2048	Average	85,000	90,000	3	216	89,784
2049	Average	112,000	202,000	3	219	201,781
2050	Wet	43,000	245,000	3	222	244,778
2051	Dry	-100,000	145,000	3	225	144,775
2052	Dry	-94,000	51,000	3	228	50,772
2053	Shasta Critical	-109,000	-58,000	3	231	-58,231
2054	Shasta Critical	-116,000	-174,000	3	234	-174,234
2055	Dry	-76,000	-250,000	3	237	-250,237
2056	Wet	55,000	-195,000	3	240	-195,240
2057	Wet	59,000	-136,000	3	243	-136,243
2058	Average	107,000	-29,000	3	246	-29,246
2059	Wet	65,000	36,000	3	249	35,751
2060	Dry	-80,000	-44,000	3	252	-44,252
2061	Wet	64,000	20,000	3	255	19,745
2062	Average	108,000	128,000	3	258	127,742
2063	Average	110,000	238,000	3	261	237,739
2064	Dry	-73,000	165,000	3	264	164,736
2065	Average	117,000	282,000	3	267	281,733
2066	Wet	59,000	341,000	3	270	340,730
2067	Wet	67,000	408,000	75	345	407,655

AF = acre-feet

WY = water year

1. Data from NCDMR (2022) Table 5-34

