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Filer:	Ronelle Candia
Organization:	Dudek
Submitter Role:	Applicant Consultant
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Revised Water Supply Assessment

Water Supply Assessment

Potentia-Viridi Battery Energy Storage Project Alameda County, California

DECEMBER 2024

Prepared for:

LEVY ALAMEDA, LLC
Project Applicant
155 Wellington St W
Toronto, Ontario M5V 3H1, Canada

CALIFORNIA ENERGY COMMISSION
Lead Agency
715 P Street,
Sacramento, California 95814

Prepared by:

DUDEK

1810 13th Street #110
Sacramento, California 95811
Contact: Matt Norcott

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AF	acre-feet
AFY	acre-feet per year
AWSDA	Annual Water Supply and Demand Assessment
APN	Assessor's Parcel Number
BARDP	Bay Area Regional Desalination Project
BESS	Battery Energy Storage System
Cal Water	California Water Service
CEQA	California Environmental Quality Act
CWC	California Water Code
CVP	Central Valley Project
DWR	California Department of Water Resources
gpd	gallons per day
gpm	gallons per minute
GAMA	Groundwater Ambient Monitoring and Assessment Program
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
mg/L	milligrams per liter
PSY	Production Safe Yield
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act
SWP	California State Water Project
SWRCB	California State Water Resources Control Board
TDS	Total dissolved solids
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
WSA	Water Supply Assessment
Zone 7	Zone 7 Water Agency

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1 Introduction

1.1 Purpose of Document

Senate Bills (SB) 610 and 221 were enacted in 2002, amending the California Water Code (CWC) to require detailed analysis of water supply availability for certain types of development projects. The primary purpose of the Bills is to improve the linkage between water and land use planning by ensuring greater communication between water providers and local planning agencies and ensuring that land use decisions for certain large development projects are fully informed as to whether a sufficient water supply is available to meet project demands. SB 610 requires preparation of a Water Supply Assessment (WSA) for a project that is subject to the California Environmental Quality Act (CEQA) and meets certain requirements.

The Potentia-Viridi Battery Energy Storage System (BESS) Project (Project) has been determined to be subject to CEQA by Alameda County (County), with the California Energy Commission acting as the CEQA lead agency. The lead agency will make an independent determination as to whether there is adequate water supply for the proposed Project, having considered the entire administrative record. In compliance with SB 610, this WSA examines the availability of the identified water supply under normal-year, single-dry-year, and multiple-dry-year conditions over a 20-year projection. This WSA also accounts for the projected water demand of the Project plus other existing and planned future uses of the identified water supply.

1.2 Project Location and Description

The Project will be sited within Assessor Parcel Number (APN) 99B-7890-2-4 located at 17257 Patterson Pass Road near the eastern boundary of Alameda County, California (Figure 1). Development of the BESS facility would occur on about 70 acres of APN 99B-7890-2-4, which is currently comprised of fallowed annual grasslands suitable for grazing. The gen-tie line would extend southeast from the Project substation, crossing Patterson Pass Rd, and then proceed east to the Point of Interconnection (POI) at the Tesla Substation. The Project's gen-tie line would be sited on APNs 99B-7890-2-4, 99B-7890-2-6, and 99B-7885-12. Land uses in the immediate vicinity of the Project include undeveloped rural agricultural lands, multiple high-voltage transmission lines and electrical substations, rural roads, and railroad lines. The nearest municipality to the Project site is the City of Tracy approximately 2.5 miles to the northeast. There are a few single-family residences near the Tesla Substation's southern and eastern boundaries. The nearest residence is about 1,500 feet southeast of the Project site and 560 feet south of the proposed gen-tie line; it is owned by the same landowner leasing the lands for the Project.

The Project would include construction, O&M, and eventual decommissioning of a 400 MW BESS with an energy storage capacity up to 3,200 MWhs. Charging from or discharging to the electrical grid would be a 500kV gen-tie connecting the project substation to the POI within the existing PG&E Tesla Substation. The facilities would be operated year-round and be available to receive or deliver energy 24 hours a day and 365 days a year.

1.3 Water Supply Assessment Applicability

SB 610 amended CWC Sections 10910 and added Sections 66455.3 and 66473.7 to the Government Code with the intention of creating a direct relationship between water supply and land use and to connect developers, planners, and local water agencies at the early stage in the planning process through WSA's.

SB 610 establishes the legal framework for assessing the sufficiency of water supply for new development which qualify as a "Project". Per California Water Code Section 10912(a), a "Project" means any of the following:

- Proposed residential development of more than 500 dwelling units.
- Proposed shopping center or business establishment employing more than 1,000 persons, or having more than 500,000 square-feet of floor space.
- Proposed commercial office building employing more than 1,000 persons or having more than 250,000 square-feet of floor space.
- Proposed hotel or motel or both, having more than 500 rooms.
- 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.
- Proposed mixed-use project that includes one or more of the above components.
- Proposed project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project. (Water Code Section 10912(a)).

The Project satisfies the industrial 40-acre land requirement and is therefore subject to a WSA. The CWC, as amended by SB 610, requires that a WSA address the following questions:

- Is there a public water system that will service the project?
- Is there a current Urban Water Management Plan (UWMP) that accounts for the project demand?
- Is groundwater a component of the supplies for the project?
- Are there sufficient supplies to serve the project over the next 20 years?

The primary question to be answered in a WSA per the requirements of SB 610 is: *Will the total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection meet the projected water demand of the proposed project, in addition to existing and planned future uses of the identified water supplies, including agricultural and manufacturing uses?*

The response to this question also informs and assists the lead agency in responding to the CEQA Guidelines Utilities and Service Systems question: *Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?*

1.3.1 Is There a Public Water System that Will Service the Project?

Section 10912 of the CWC defines a "public water system" as a system that has 3,000 or more service connections and provides piped water to the public for human consumption. The Project is located within the service area for Zone 7 Water Agency (herein referred to as Zone 7, shown in Figure 2). Zone 7 is a water wholesaler and primarily sells water to water retailers (Zone 7 2021). Zone 7's retailers consist of the California Water Service (Cal Water), the City of Pleasanton (Pleasanton), the City of Livermore (Livermore), and the Dublin San Ramon Services District (DSRSD). Because Zone 7's water supplies are provided to more than 3,000 users (through its retailers), it is required to prepare a UWMP and is considered a public water system (Zone 7 2021).

Under SB 610, WSA reports must be prepared and furnished to local governments by the water utility serving that community for inclusion in any environmental documentation for projects meeting the specified requirements under Section 10912 (a) of the CWC and subject to CEQA. According to CWC Section 10910 (g)(1), "[…] the governing body of each public water system, or the city or county if either is required to comply with this act […] shall approve the assessment prepared pursuant to this section at a regular or special meeting." According to SB 610, the public water system serving the project area is required to prepare the WSA report.

1.3.2 Urban Water Management Plan Coverage

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support long-term resource planning and ensure adequate water supplies. UWMPs must be updated and submitted to the California Department of Water Resources (DWR) every 5 years for review and approval. The DWR has identified the UWMP as a foundational document in the preparation of a WSA, noting that a thorough UWMP can provide the required information to fulfill the standards set forth by SB 610. Every urban water supplier that either delivers more than 3,000 AF per year (AFY) of water annually or serves more than 3,000 connections is required to assess the reliability of its water sources over a 20-year period under normal-year, dry-year, and multiple dry-year scenarios; these are the same requirements of a WSA, as specified by SB 610. A WSA may also rely on additional water supply data beyond the information in the UWMP.

An UWMP was created and submitted to DWR to satisfy 2020 requirements by Zone 7. The 2020 UWMP for Zone 7 contains detailed information about the urban water supplier's water supply and demand estimates. The 2020 UWMP serves as an update to Zone 7's water resource needs, water use efficiency programs, water reliability assessment and strategies to mitigate water shortage conditions and builds upon the last UWMP that was submitted in 2015 (Zone 7 2021). The water demand for the Project is not specifically accounted for in the UWMP, however, the site is included in the General Plan which shows the existing general plan designation and zoning for the site.

1.3.3 Is Groundwater a Component of the Supplies for the Project?

Groundwater is one of the main sources of water supply for the Zone 7's distribution system and the public water supplier owns and operates ten municipal wells within the Livermore Valley Groundwater Basin which is further discussed in Section 4.2.1 (Zone 7 2021). It is assumed groundwater will make up a component of the supplies for the Project.

2 Project Water Demand

Construction of the Project is anticipated to commence in Q1 2026 (if the Project is approved) and testing and commissioning is anticipated to conclude no later than Q2 2028. During construction, it is estimated approximately 49.1 acre-feet of untreated water would be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. A sanitary water supply line would not be required during construction because restroom facilities would be portable units, serviced by licensed providers, and water and sewage from the restroom facilities would be stored in onsite tanks and serviced by trucks. Drinking water would be provided via portable water coolers. Construction water is anticipated to be purchased from a local water purveyor and trucked to the site. Grading and dust suppression during the first phases of the Project are anticipated to consume the majority of water demand. Construction water is anticipated to be purchased from a local water purveyor and trucked to the site. The site plan can be found in Appendix A. Table 2.1 shows the anticipated construction timeline for the Project.

Table 2.1. Anticipated Project Construction Timeline

Construction Activity	Estimated Duration
Site Preparation	8 Weeks
Civil Work and Grading	24 Weeks
Foundations and Underground Equipment	16 Weeks
BESS Equipment Installation	20 Weeks
Project Substation Installation	32 Weeks
Gen-Tie Foundations and Structure Erection	8 Weeks
Gen-Tie Line Stringing and Pulling	2 Weeks
Testing and Commissioning	22 Weeks
PG&E Interconnection Facility Upgrades within Tesla Substation	26 Weeks

Source: Hana, pers. comm, 2024
Notes: Construction activities are not sequential and are dependent on numerous factors such as weather and scheduling.

Water demand for the operation and maintenance phase of the Project is anticipated to be 6 AFY for 18 employees and septic tank pumping. Water demand for the decommissioning phase was not provided by the Project Applicant, however, the Project lifespan is anticipated to be 15 years longer than the 20-year water projections reviewed in this WSA and required by SB 610.

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3 Water Resources Plans and Programs

3.1 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) is a package of three bills (Assembly Bill 1739, SB 1168, and SB 1319) and provides local agencies with a framework for managing groundwater basins in a sustainable manner. The SGMA establishes minimum standards for sustainable groundwater management, roles and responsibilities for local agencies that manage groundwater resources, priorities, and timelines to achieve sustainable groundwater management within 20 years of adoption of a Groundwater Sustainability Plan (GSP). The SGMA also requires all high and medium priority basins be sustainably managed.

3.2 Urban Water Management Planning Act

The Urban Water Management Planning Act (CWC Sections 10610–10657) requires urban water suppliers to prepare a UWMP every 5 years and to submit it to the DWR, the California State Library, and any city or county within which the supplier provides water supplies. All urban water suppliers, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 AF annually are required to prepare a UWMP (CWC Section 10617).

The Urban Water Management Planning Act was enacted in 1983. Over the years, it has been amended in response to water resource challenges and planning imperatives confronting California. A significant amendment was made in 2009 as a result of the governor's call for a statewide 20% reduction in urban water use by 2020, referred to as "20x2020," the Water Conservation Act of 2009, and "SB X7-7." This amendment required urban retail water suppliers to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20% by 2020. Beginning in 2016, urban retail water suppliers were required to comply with the water conservation requirements in SB X7-7 in order to be eligible for state water grants or loans.

A subsequent substantial revision to the Urban Water Management Planning Act was made in 2018 through a pair of bills (i.e., Assembly Bill 1668 and SB 606), described in Section 3.3, Water Use Efficiency Standards. These changes include, among other things, additional requirements for Water Shortage Contingency Plans, expansion of dry-year supply reliability assessments to a 5-year drought period, establishment of annual drought risk assessment procedures and reporting, and new conservation targets referred to as "annual water use objectives," which will require retailers to continue to reduce water use beyond the 2020 SB X7-7 targets. The Urban Water Management Planning Act contains numerous other requirements that a UWMP must satisfy.

3.3 Water Use Efficiency Standards

The Water Conservation legislation of 2018 (SB 606 and Assembly Bill 1668)— referred to as "Making Water Conservation a California Way of Life" or the "2018 Water Conservation Legislation"— established a new foundation for long-term improvements in urban water supplier conservation and drought planning in order to adapt to climate change and the longer more intense droughts in California. Together, Assembly Bill 1668 and SB 606 lay out a new long-term water conservation framework for California. This new framework is far-reaching for both the urban and

agricultural sectors of California and represents a major shift in focus. Programs and initiatives are organized around four primary goals:

1. Use water more wisely
2. Eliminate water waste
3. Strengthen local drought resilience
4. Improve agricultural water use efficiency and drought planning

Collectively, this legislation provides a road map for all Californians to work together to ensure that we will have enough water now and in the future. One of the major outcomes of the legislation is the adoption of long-term standards for the efficient use of water and performance measures for commercial, industrial, and institutional water use on or before June 30, 2022. The bill establishes a standard for indoor water use of 55 gallons per capita daily to be reached by 2025, 52.5 gallons per capita daily beginning in 2025, decreasing to 50 gallons per capita daily beginning in 2030, or an alternative to this standard as determined jointly by DWR and State Water Resources Control Board in accordance with necessary studies and investigations.

On July 8, 2021, the governor signed Executive Order N-10-21 which asks Californians to voluntarily reduce water use by 15% from 2020 levels. The Executive Order was in direct response to California experiencing the second driest year on record and the ongoing drought.

On January 4, 2022, the State Water Resources Control Board adopted an emergency regulation that prohibits certain wasteful water use practices statewide and encourages Californians to monitor their water use more closely while building habits to use water wisely.

3.4 Water Shortage Contingency Plan

Zone 7 includes a Water Shortage Contingency Plan (WSCP) within their UWMP that presents how the water supplier will respond in the event of an actual water shortage contingency. The WSCP includes six water shortage levels that correspond to reduction of 10, 20, 30, 40, and 50 percent for a shortage in standard water supplies. As Zone 7 operates as a water wholesaler, it cannot enforce household consumption limits, but it can advise water retailers who purchase Zone 7 water to reduce demand in either a voluntary or mandatory manner, depending on the severity. As part of the WSCP, Zone 7 is also required to submit an Annual Water Supply and Demand Assessment (AWSDA) per CWC §10632.1 beginning in 2022 (Zone 7 2021). The AWSDA covers near-term planning of water supplies in between UWMP gaps and the main points are summarized below:

1. An estimate of the current annual demand for treated and untreated water, as well as a five-year projection (including water losses and water conservation) based on projections from Zone 7's retailers, observed trends, and other updated information. The Annual Sustainability Report is more focused on "Delivery Requests" submitted by the retailers, while Zone 7's Water Supply Operations Plan is generally based on forecasted demands based on observed trends updated over the year.
2. A description and quantification of available water supplies to Zone 7 at the beginning of the calendar year and projected water supplies over the next five years.
3. A comparison of current and projected water demand with the available water supplies to determine if a water shortage condition is anticipated.

4. A review of water supply programs (to maintain long-term service reliability) and existing infrastructure and capabilities.
5. A discussion of water conservation requirements and other long-term supply programs needed to meet Zone 7 treated and untreated water demands for single-dry and multiple dry year conditions, as specified in Zone 7's UWMP.

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4 Water Resources Inventory

4.1 Local Surface Water

Zone 7 uses imported surface water, primarily through the California State Water Project (SWP) and the Central Valley Project (CVP), to meet approximately 80 percent of its demand needs. Another 10 percent is supplied by captured watershed runoff, and the remaining ten percent is made up of previously imported water supplies that are stored in the local groundwater basin. Captured watershed runoff is supplied via a Zone 7 water right to divert flows from Arroyo Valle. The Arroyo Valle watershed supply is stored in Lake Del Valle, which is managed by DWR as part of the SWP (Zone 7 2021).

4.1.1 Surface Water Quality

The majority of water Zone 7 is allocated comes from the Sacramento-San Joaquin Delta (herein referred to as the Delta), as well carryover water, water banked in Kern County, and transfer water. There are several known water quality issues specific to Zone 7 and associated with Delta water supplies:

- Algal byproducts and blooms
- Total and dissolved organic carbon
- Turbidity
- Salinity or Total Dissolved Solids

Zone 7 has water treatment facilities to treat all the above issues except for salinity, which is managed by groundwater pumping and demineralization. Shutdowns due to salinity are problematic, particularly in dry years when there is insufficient freshwater to combat and repel salinity intrusion. Sea-level rise is also expected to increase salinity in the Delta (Zone 7 2021).

4.2 Groundwater

The proposed Project is located in the area between the Livermore Valley Groundwater Basin (DWR Basin No. 2-10) and the Tracy Subbasin of the San Joaquin Valley Groundwater Basin (DWR Basin No. 5-22.15; Figure 2), however, Zone 7 only relies on supplies from the Livermore Valley Groundwater Basin. The majority of the supply wells exist within the Main Basin Management Area of the Livermore Valley Groundwater Basin which includes the Upper Aquifer and the Lower Aquifer. The Main Basin is composed of four subbasins: Castle, Bernal, Amador, and Mocho II (Zone 7 2021).

Zone 7 considers the Main Basin of the Livermore Valley Groundwater Basin a water storage facility and is not a component of long-term supply for Zone 7. Zone 7 utilizes the Main Basin as a storage facility via recharging the Basin with surface water supplies SWP water or locally-stored runoff from the Arroyo Valle watershed) and extracting only the volume of water that has been recharged. Zone 7 uses groundwater banking agreements with agencies located in Kern County (Semitropic Water Storage District and Cawelo Water District) to store excess water available from the SWP during wet periods and then recovers it for delivery when SWP allotment is curtailed by droughts or

disruptions. Zone 7 is allowed to store 78,000 AF and 120,000 AF in the Semitropic and Cawelo groundwater banks, respectively (Zone 7 2021).

4.2.1 Groundwater Basin Description

The Livermore Valley Groundwater Basin (DWR Basin No. 2-10) covers approximately 109 square miles in Alameda and Contra Costa Counties. The majority of the Livermore Valley Groundwater Basin lies within the Zone 7 Water Agency service area (Figure 2). The Basin is bounded by the Pleasanton ridge to the west, the Altamont hills to the east, the Livermore Upland to the south, and the Orinda Upland to the north (DWR 2006). Water bearing formations in the Basin include valley-fill materials, the Livermore Formation, and the Tassajara Formation (Figure 3; DWR 2006). The valley-fill material is up to 400 feet thick and consists of stream channel deposits, alluvium, alluvial fan deposits, and terrace deposits (DWR 2006). These deposits are composed of unconsolidated sand, gravel, silt, and clay. The Livermore Formation is up to 4,000 feet thick and consists of unconsolidated to semi-consolidated gravel, sand, silt, and clay (DWR 2006). The Tassajara Formation occurs in the central part of the Basin at depths ranging from 200 to 750 feet and is composed of sandstone, siltstone, shale, conglomerate, and limestone (DWR 2006). Wells in the Tassajara Formation typically only yield enough water for domestic or stock purposes (DWR 2006).

The Livermore Valley Groundwater Basin is not subject to a court adjudication. In 2014, the Sustainable Groundwater Management Act (SGMA) was passed, which created a basin prioritization system that ranks groundwater basins as high, medium, low, or very low priority. The DWR has designated the Livermore Valley Groundwater Basin as a medium priority basin (DWR 2018). Based on this determination, Zone 7 Water Agency, in its role as the Groundwater Sustainability Agency (GSA) for the Livermore Valley Groundwater Basin, was required to prepare a Groundwater Sustainability Plan (GSP) for the Basin by the year 2022. Zone 7 Water Agency has submitted their 2017 Groundwater Management Program Annual Report to DWR as an alternative to GSP preparation and it was approved in 2019.

4.2.2 On-Site Well Inventory and Groundwater Levels

Nearby groundwater well information was pulled from various data sources: California State Water Resources Control Boards (SWRCB) Groundwater Ambient Monitoring and Assessment Program (GAMA), the United States Geological Surveys (USGS) National Water Information System (NWIS), and DWR's SGMA Data Viewer Wells. According to these data sources, there is only one well (State Well No. 02S04E31B001M) within 0.5 miles of the Project boundary and no wells within the Project Site itself (Figure 4). Groundwater levels were last measured in State Well No. 02S04E31B001M on March 17, 1960 when the depth to groundwater was 21 feet below the ground surface at an elevation of 381.54 feet (DWR 2023).

Groundwater levels are measured frequently within the Main Basin and are compared to historic lows to calculate storage availability. According to the Zone 7 2022 Water Year Annual Report:

> Water levels decreased by as much as 15 feet (ft) in the Upper Aquifer and 45 ft in the Lower Aquifer within portions of the Main Basin from Fall 2021 to Fall 2022. In general, groundwater elevations in the western (Bernal Subarea) and eastern (Mocho II Subarea) portions of the Main Basin remained well above historic lows (up to about 140 ft). However, there were some areas in the Amador Subarea where water levels dropped up to 45 feet below historic lows.

4.2.3 Groundwater Quality

Groundwater quality is highly variable throughout the Livermore Valley Groundwater Basin. The northern portion of the Basin is dominated by sodium-bicarbonate type water, with the western portion of the Basin being dominated by magnesium-sodium-bicarbonate type water, and the eastern portion of the Basin being dominated by magnesium-bicarbonate type water (DWR 2006). Total dissolved solids (TDS) in the Basin ranges from 300 mg/L to 550 mg/L, with an average TDS of 450 mg/L (DWR 2006). Groundwater impairments in the Basin include areas of elevated boron concentrations. Boron is likely sourced from marine sediments adjacent to the Basin and is generally highest in shallow wells. If water for the Project is sourced from Livermore hydrants, it will be delivered to the site as treated, potable water.

4.3 Imported Water and Wastewater/Recycled Water

Regionally imported water comes from the California Aqueduct (SWP) and the Delta Mendota Canal as part of the Central Valley Project (CVP) which both derive water from reservoirs in Northern California and the Sacramento–San Joaquin River Delta. Both the SWP and the CVP are located east of the project site. Imported water provides over 80 percent of the treated water supplied to its customers on an annual basis (Zone 7 2021).

Zone 7 does not currently handle wastewater or recycled water, but its water retailers are involved in various processes such as collection, treatment and discharge, and distribution of wastewater. Within Zone 7's service area, the only current use of recycled water (as of 2021), was non-potable applications such as landscape irrigation. The Bay Area Regional Desalination Project (BARDP) is a planned desalination project that will increase the supply of potable water for Zone 7 by 2030 (Zone 7 2021).

4.4 Climate

The climate of Zone 7's management area is classified as a Mediterranean with hot, dry summers and cool, moist winters. Livermore averages approximately 15.2 inches of precipitation annually based on data collected from 2007 to 2019 (U.S. Climate Data 2023). Climate change is expected to increase water demand as well as variability and reliability of water supply. Rising temperatures will lead to increased evapotranspiration and natural disasters are likely to become more prevalent, with wildfires and sea level rise expected to impact the service area for Zone 7 in the future. Zone 7 is aware of these concerns as is moving to reduce both its energy and water consumption by considering additional storage, potable reuse, and desalination.

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5 Reliability of Water Supplies

5.1 Zone 7 Water Demand and Supplies

As the Project site exists within the boundaries of Zone 7's service area, it is assumed Zone 7 will be the sole water provider for the Project. Actual and projected water supplies for Zone 7 are included in Table 5.1 and Table 5.2. These projections were taken from the 2020 UWMP for the Zone 7 and show the actual and projected supply and demand estimates for a normal water year in 5-year increments. Table 5.3 and Table 5.4 show the estimates for a single dry year and multiple dry years, respectively. As Zone 7 is a wholesale water supplier, its highest demand comes from the water retailers it sells water to (Table 5.1). The water demand for Zone 7 is expected to increase each year until 2040, at which point the demand is projected to stabilize (Table 5.2).

Zone 7 contracts with DWR for SWP water, including "Table A" water (including carryover water), Article 21 water, Article 56d water, and Yuba Accord water. Article 21 and 56d water, referred to as surplus water and turn-back pool water, respectively, do not constitute a significant portion of Zone 7's overall water supply (Zone 7 2021) and are not included in this WSA analysis. Each year, DWR calculates the total amount of water available for delivery in the system, accounting for the hydrologic cycle, regulatory restrictions on Bay-Delta exports, existing infrastructure conditions and regulatory uncertainty, and apportions the remaining available water proportionally to each of the SWP contractors according to their maximum allotment, also referred to as "Table A" water. As of 2020, Zone 7's current Table A allocation is 80,619 AFY, however, the existing and future supply conditions are modeled using lower supply assumptions based on actual use (Zone 7 2021). In 2020, DWR issued the Final 2019 State Water Project Delivery Capability Report which ran the model assuming existing facilities, data based on 82 years of historical inflows (1922 through 2003), current regulatory and operational constraints, and contractor demands at maximum Table A amounts. According to the UWMP:

> For Zone 7's Table A supply, the 2019 Delivery Capability Report's existing condition was assumed to represent 2020 (59% Table A reliability, 47,600 AFY), and the future condition (54% Table A reliability, 43,500 AFY) was applied to 2040; the years in between were interpolated between these two bookends. Note that the effect of the proposed Delta Conveyance Project on SWP water supply yield is still being analyzed and has not been included.

The 59% and 54% Table A allocation estimations are reflected in the Tables 5.1 and 5.2 below. During single dry years (Table 5.3) and extended years of drought (Table 5.4) the Table A allocation is further reduced. The allocation is most conservative (5% of total annual allocation) during a single dry year, and demand is met is by utilizing the various groundwater banks (Main Basin, Semitropic, Cawelo) which have theoretically accumulated water supply from wet years. The combination of Zone 7's SWP Table A allotment and carryover water, its use of groundwater banking programs, and the use of inter-agency exchange agreements provides Zone 7 with a high degree of flexibility in meeting the region's water demands across all water-year types.

Table 5.1. Current and Projected Water Demand for Normal Year

Water Sources	Actual (AF)	Projected (AF)				
	2020	2025	2030	2035	2040	2045
Demand						
Sales to other agencies	38,020	43,000	43,200	43,400	43,700	43,700
Agricultural irrigation	5,810	5,500	7,800	8,300	8,300	8,300
Retail demand for use by suppliers that are primarily wholesaler with a small volume of retail sales	730	800	800	800	800	800
Loses	180	1,000	1,000	1,300	2,500	2,500
Total	**44,740**	**50,300**	**52,800**	**53,800**	**55,300**	**55,300**

Source: Zone 7 2021
Notes: AF = acre-feet; 1 acre-foot = 325,851 gallons.

Table 5.2. Projected Water Supply and Demand Comparison for Normal Year

Supply/Demand	Projected (AF)				
	2025	2030	2035	2040	2045
Supplies					
SWP Table A	47,000	46,000	45,000	43,500	43,500
Yuba Accord	0	0	0	0	0
Turnback Pool	0	0	0	0	0
SWP Carryover	10,000	10,000	10,000	10,000	10,000
Arroyo Valle	5,500	5,500	5,500	5,500	5,500
Main Basin	9,200	9,200	9,200	9,200	9,200
Semitropic	0	0	0	0	0
Cawelo	0	0	0	0	0
BARDP/Potable Reuse	0	5,000	5,000	5,000	5,000
Sites Reservoir Project	0	10,000	10,000	10,000	10,000
Transfers	5,000	5,000	0	0	0
Chain of Lakes	0	0	0	0	0
Total Potable Supply	**76,700**	**90,700**	**84,700**	**83,200**	**83,200**
Demands					
Retailer Demand	43,000	43,200	43,400	43,700	43,700
Untreated Water Demand	5,500	7,800	8,300	8,300	8,300
Direct Retail Demand	800	800	800	800	800
Losses	1,000	1,000	1,300	2,500	2,500
Total Water Demand	**50,300**	**52,800**	**53,800**	**55,300**	**55,300**
Difference	**26,400**	**37,900**	**30,900**	**27,900**	**27,900**

Source: Zone 7 2021
Notes: AF = acre-feet; 1 acre-foot = 325,851 gallons.

Table 5.3. Projected Water Supply and Demand Comparison for Single Dry Year

Supply/Demand	Projected (AF)				
	2025	2030	2035	2040	2045
Supplies					
SWP Table A	4,400	4,400	4,400	4,400	4,400
Yuba Accord	0	0	0	0	0
Turnback Pool	0	0	0	0	0
SWP Carryover	15,500	12,000	13,800	12,600	12,700
Arroyo Valle	0	0	0	0	0
Main Basin	27,600	29,900	31,800	32,200	32,500
Semitropic	6,500	6,600	6,600	6,500	6,500
Cawelo	7,100	7,100	7,100	7,100	7,100
BARDP/Potable Reuse	0	5,000	5,000	5,000	5,000
Sites Reservoir Project	0	14,200	15,700	15,300	15,100
Transfers	4,500	4,600	0	0	0
Chain of Lakes	0	0	0	0	0
Total Potable Supply	**65,600**	**92,100**	**94,200**	**92,500**	**92,300**
Demands					
Retailer Demand	43,000	43,200	43,400	43,700	43,700
Untreated Water Demand	5,500	7,800	8,300	8,300	8,300
Direct Retail Demand	800	800	800	800	800
Losses	1,000	1,000	1,300	2,500	2,500
Total Water Demand	**50,300**	**52,800**	**53,800**	**55,300**	**55,300**
Difference	**15,300**	**39,300**	**40,400**	**37,200**	**37,000**

Source: Zone 7 2021
Notes: AF = acre-feet; 1 acre-foot = 325,851 gallons.

Table 5.4. Projected Water Supply and Demand Comparison for Multiple Dry Years

	Projected (AF)					
		2025	2030	2035	2040	2045
First Year	**Supplies**					
	SWP Table A	19,900	19,500	19,500	19,500	19,400
	SWP Carryover	15,500	12,000	13,800	12,600	12,700
	Arroyo Valle	1,700	1,700	1,700	1,700	1,700
	Main Basin	27,600	29,900	31,800	32,200	32,500
	Semitropic	10,000	9,900	10,000	10,000	9,900
	Cawelo	9,700	9,700	9,700	9,700	9,700
	BARDP/ Potable Reuse	0	5,000	5,000	5,000	5,000

Table 5.4. Projected Water Supply and Demand Comparison for Multiple Dry Years

	Projected (AF)					
		2025	2030	2035	2040	2045
	Sites Reservoir Project	0	15,300	17,000	16,800	16,600
	Transfers	4,800	4,800	0	0	0
	Chain of Lakes	0	8,800	10,000	9,600	9,300
	Supply Totals	89,200	116,600	118,500	117,100	116,800
	Demands					
	Retailer Demand	43,000	43,200	43,400	43,700	43,700
	Untreated Water Demand	5,500	7,800	8,300	8,300	8,300
	Direct Retail Demand	800	800	800	800	800
	Losses	1,000	1,000	1,300	2,500	2,500
	Demand Totals	50,300	52,800	53,800	55,300	55,300
	Difference	**38,900**	**63,800**	**64,700**	**61,800**	**61,500**
Second Year	**Supplies**					
	SWP Table A	20,200	19,800	19,800	19,600	19,600
	SWP Carryover	2,800	4,400	3,500	3,100	3,100
	Arroyo Valle	1,500	1,500	1,500	1,500	1,500
	Main Basin	25,100	29,400	31,400	31,600	31,900
	Semitropic	10,000	10,000	10,000	10,000	10,000
	Cawelo	9,700	9,700	9,700	9,700	9,700
	BARDP/Potable Reuse	0	5,000	5,000	5,000	5,000
	Sites Reservoir Project	0	18,100	18,300	17,700	17,800
	Transfers	4,900	0	0	0	0
	Chain of Lakes	600	7,900	8,800	8,400	8,200
	Supply Totals	74,800	105,800	108,000	106,600	106,800
	Demands					
	Retailer Demand	43,000	43,200	43,400	43,700	43,700
	Untreated Water Demand	6,900	8,300	8,300	8,300	8,300
	Direct Retail Demand	800	800	800	800	800
	Losses	1,000	1,060	1,600	2,500	2,500
	Demand Totals	51,700	53,360	54,200	55,300	55,300
	Difference	**23,100**	**52,440**	**53,800**	**51,300**	**51,500**
Third Year	**Supplies**					
	SWP Table A	20,200	19,800	19,700	19,700	19,600

Table 5.4. Projected Water Supply and Demand Comparison for Multiple Dry Years

	Projected (AF)					
		2025	2030	2035	2040	2045
	SWP Carryover	1,800	2,700	2,500	2,300	2,300
	Arroyo Valle	1,500	1,500	1,500	1,500	1,500
	Main Basin	20,600	28,300	30,300	30,300	30,700
	Semitropic	10,000	10,000	10,000	10,000	9,900
	Cawelo	9,700	9,800	9,700	9,700	9,700
	BARDP/Potable Reuse	0	5,000	5,000	5,000	5,000
	Sites Reservoir Project	0	16,600	16,400	16,300	16,300
	Transfers	4,900	0	0	0	0
	Chain of Lakes	400	6,900	7,700	7,500	7,300
	Supply Totals	69,100	100,600	102,700	102,300	102,300
	Demands					
	Retailer Demand	43,000	43,200	43,400	43,700	43,700
	Untreated Water Demand	7,100	8,300	8,300	8,300	8,300
	Direct Retail Demand	800	800	800	800	800
	Losses	1,000	1,120	1,800	2,500	2,500
	Demand Totals	52,000	53,520	54,400	55,300	55,300
	Difference	**17,100**	**47,080**	**48,300**	**47,000**	**47,000**
Fourth Year	**Supplies**					
	SWP Table A	20,200	19,500	19,800	19,700	19,800
	SWP Carryover	1,800	2,100	2,000	1,900	1,900
	Arroyo Valle	1,500	1,500	1,500	1,500	1,500
	Main Basin	15,100	26,900	28,800	28,600	28,900
	Semitropic	10,100	10,000	10,000	10,000	10,000
	Cawelo	9,700	9,700	9,700	9,700	9,700
	BARDP/Potable Reuse	0	5,000	5,000	5,000	5,000
	Sites Reservoir Project	0	16,000	16,000	15,900	15,900
	Transfers	4,900	0	0	0	0
	Chain of Lakes	300	6,000	6,700	6,600	6,500
	Supply Totals	63,600	96,700	99,500	98,900	99,200
	Demands					
	Retailer Demand	43,000	43,200	43,400	43,700	43,700
	Untreated Water Demand	7,350	8,300	8,300	8,300	8,300

Table 5.4. Projected Water Supply and Demand Comparison for Multiple Dry Years

	Projected (AF)					
		2025	2030	2035	2040	2045
	Direct Retail Demand	800	800	800	800	800
	Losses	1,000	1,180	2,000	2,500	2,500
	Demand Totals	52,250	53,580	54,700	55,300	55,300
	Difference	**11,350**	**43,120**	**44,800**	**43,600**	**43,900**
Fifth Year	**Supplies**					
	SWP Table A	20,200	19,800	19,700	19,600	19,600
	SWP Carryover	1,800	1,900	1,900	1,900	1,900
	Arroyo Valle	1,500	1,500	1,500	1,500	1,500
	Main Basin	9,700	25,200	27,000	26,500	26,900
	Semitropic	10,100	10,000	10,000	10,000	10,000
	Cawelo	9,700	9,700	9,700	9,700	9,700
	BARDP/ Potable Reuse	0	5,000	5,000	5,000	5,000
	Sites Reservoir Project	0	15,800	15,800	15,800	15,700
	Transfers	4,900	0	0	0	0
	Chain of Lakes	300	5,200	5,900	5,900	5,800
	Supply Totals	58,200	94,100	96,500	95,900	96,100
	Demands					
	Retailer Demand	43,000	43,200	43,400	43,700	43,700
	Untreated Water Demand	7,600	8,300	8,300	8,300	8,300
	Direct Retail Demand	800	800	800	800	800
	Losses	1,000	1,240	2,300	2,500	2,500
	Demand Totals	52,500	53,740	55,000	55,300	55,300
	Difference	**5,700**	**40,360**	**41,500**	**40,600**	**40,800**

Source: Zone 7 2021
Notes: AF = acre-feet; 1 acre-foot = 325,851 gallons.

In each of the supply and demand tables, Zone 7 is expected to have a surplus of supplies in normal, single-dry, and multiple dry year conditions, while having a population growth projection of 20 percent by 2045 (Table 5.5).

Table 5.5. Zone 7 Service Area Population – Current and Projected

	2020	2025	2030	2035	2040	2045
Population Served	266,000	284,000	299,000	312,000	323,000	323,000

Source: Zone 7 2021

6 Conclusion

As required and stated in Water Code Section 10910(c)(3), if the projected water demand associated with the 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. The previous sections of this WSA discuss these factors and are summarized below:

- Zone 7 Water Agency (Zone 7) has been identified as the public water supplier for the Project as the Project site exists within the service boundary for Zone 7.
- The Project site is not located within a groundwater basin, however, water supply from the Livermore Valley Groundwater Basin is an essential portion of water supply for Zone 7, and is assumed to be part of the water supply or the Project.
- The estimated total water demand of the Project is 49.1 AF during the construction phase and 6 AFY for operation and maintenance.
- The UWMP projects an increase in water demand from 2020 to 2045.

According to the UWMP, Zone 7 is well positioned to withstand single year and multiyear droughts due to flexibility in their annual water supply. As evidenced in Section 5 of this report, Zone 7 expects to meet demands with extra supplies in all scenarios, with extra supply going to storage for use during the following year(s). As all water demand will be used within the first three years of the Project start date, the future of the Delta Conveyance Project is less relevant for this Project, however, it will be important for Zone 7's sustainability into the future. Ultimately, the 2020 UWMP and this WSA indicate that Zone 7 can meet this Project's water demands during normal years, single dry years, and a five consecutive year drought period over the next 20 years.

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SOURCE: USGS National Map; Esri

DUDEK

0 0.25 0.5 Miles

FIGURE 1

Project Location

Potentia-Viridi Battery Energy Storage System Facility Project

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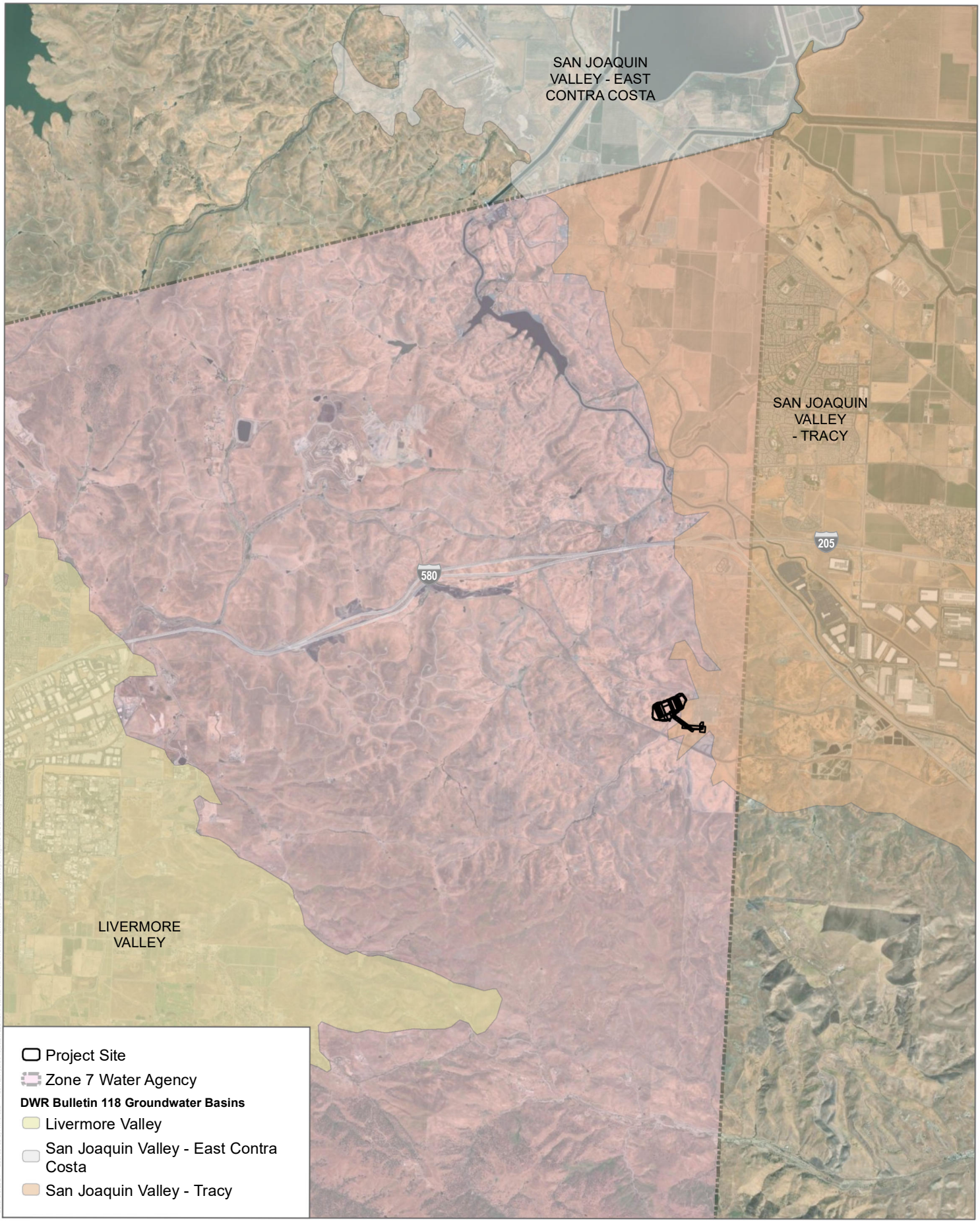

SOURCE: ESRI; SWRCB

DUDEK

0 4,550 9,100 Feet

FIGURE 2

Hydrologic Regions and Drinking Water Systems

Potentia-Viridi BESS Project Water Supply Assessment

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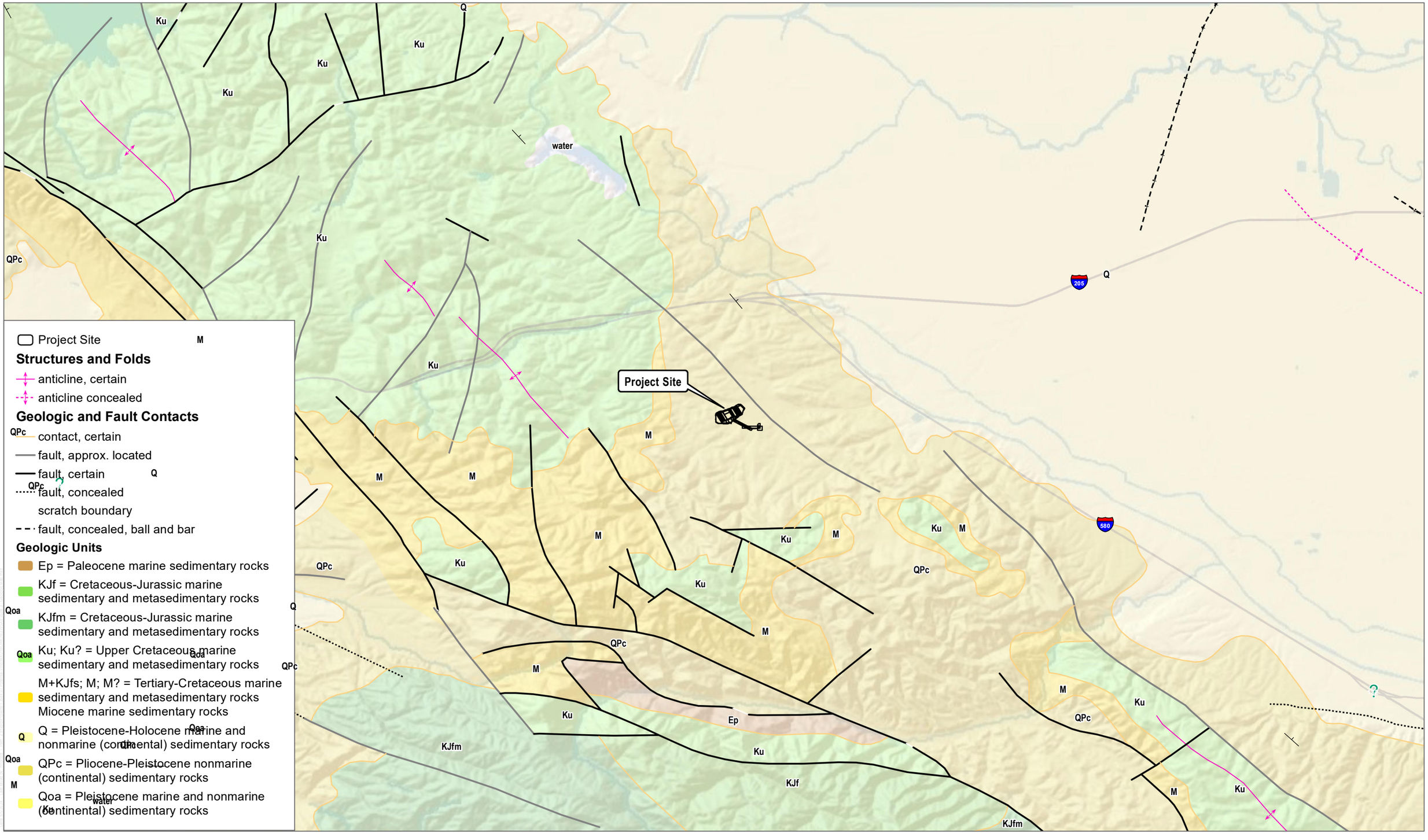

SOURCE: California Geologic Survey 2010

DUDEK

FIGURE 3

Geologic Map

Potentia-Viridi Battery Energy Storage System Facility Project

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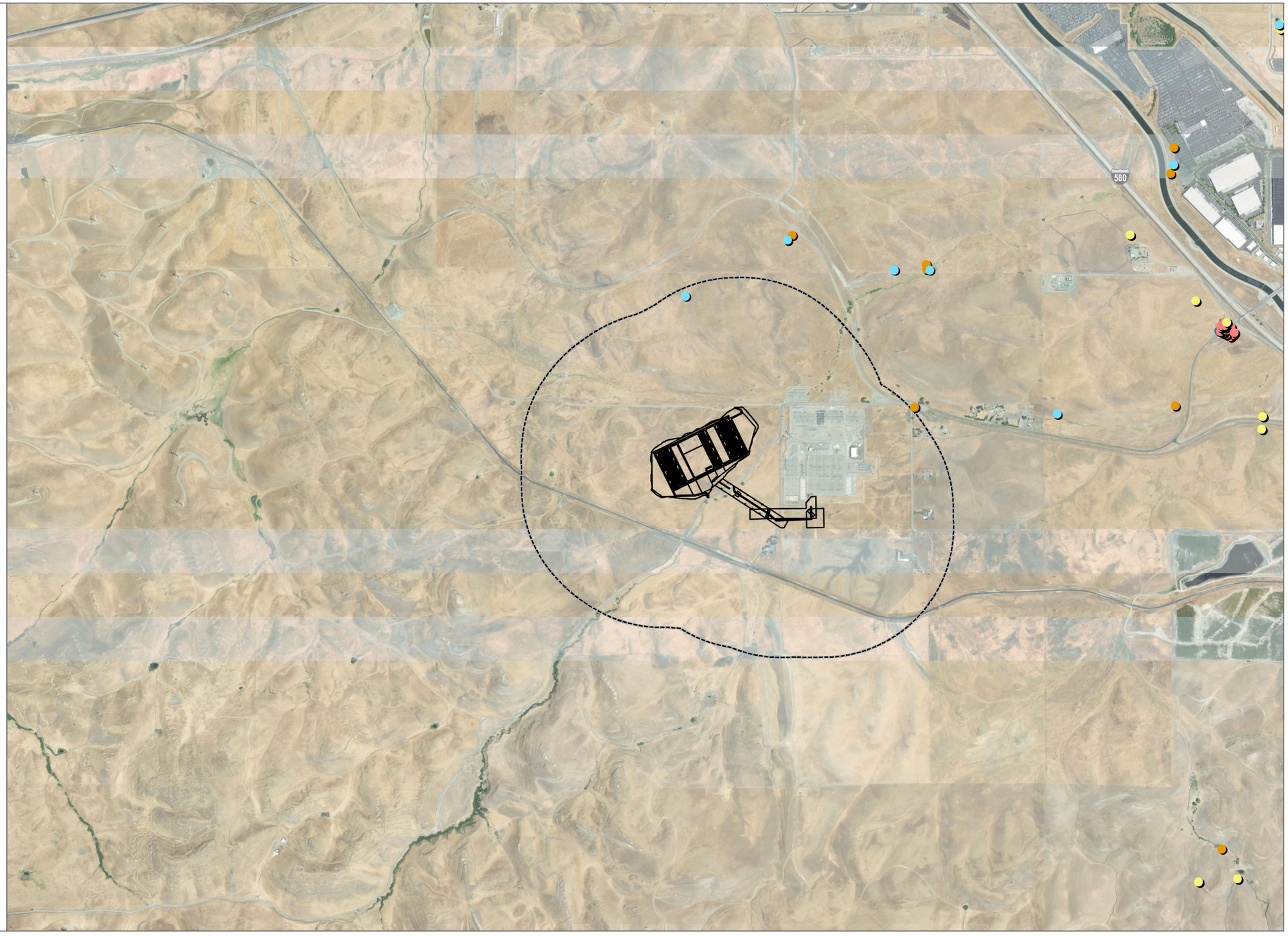
Legend

- NWIS Mapper Wells
- SGMA Data Viewer Wells

GAMA Wells

- Monitoring
- Municipal
- Water Supply, Other



SOURCE: ESRI; DWR, USGS, SWRCB

DUDEK

0 950 1,900 Feet

FIGURE 04

Groundwater Wells within 0.5 Miles of Project Site

Potentia-Viridi Battery Energy Storage System Facility Project

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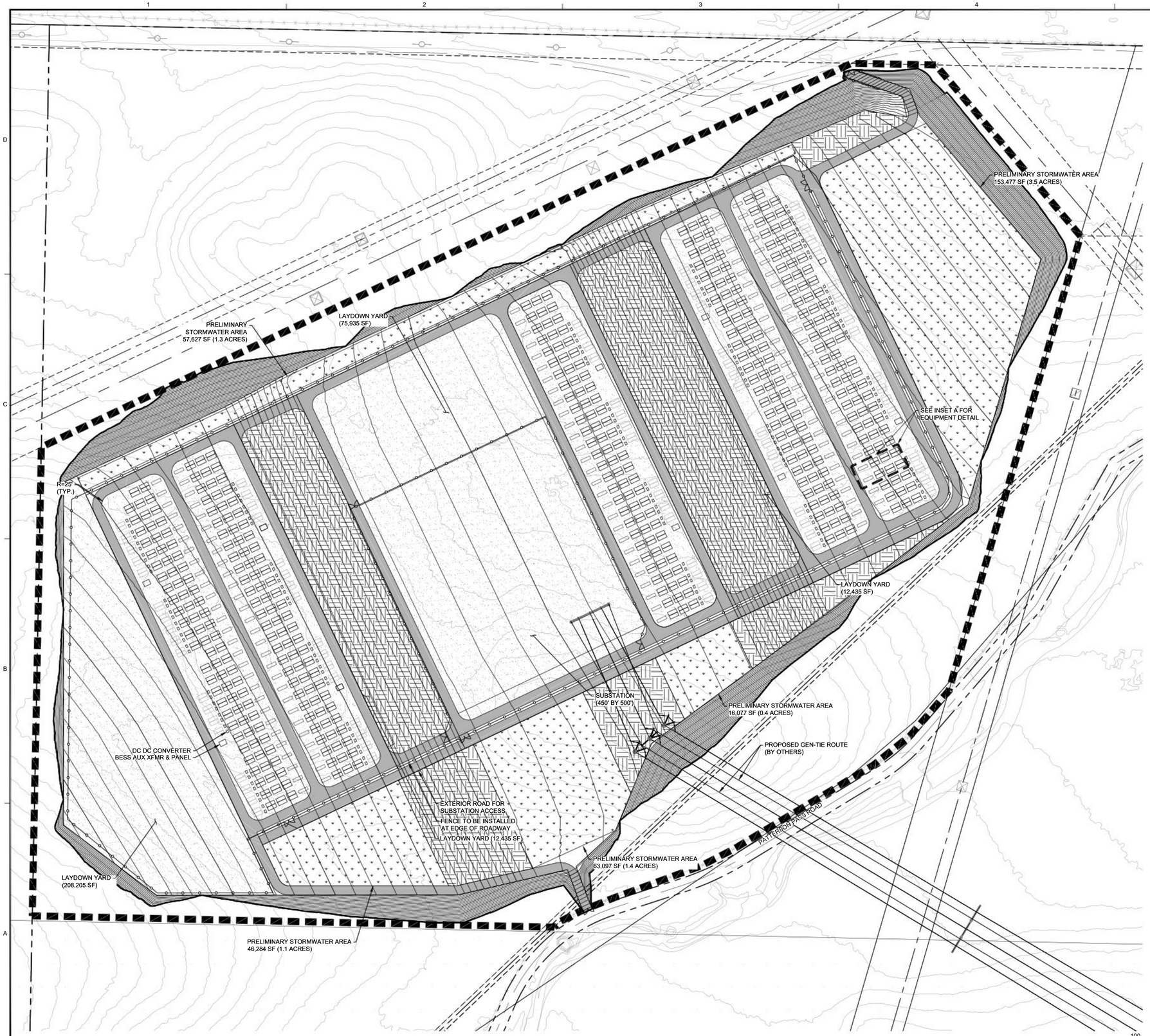
Appendix A
Site Plan



LEGEND

- GRAVEL ACCESS ROAD
- GRAVEL
- STORMWATER/ LID AREA
- LANDSCAPE

EARTHWORK QUANTITIES
CUT = 588,018 CUBIC YARDS
FILL = 344,900 CUBIC YARDS
NET = 243,118 CUBIC YARDS (EXPORT)

TOTAL = 932,918 CUBIC YARDS

NOTE:
1. EARTHWORK QUANTITIES ARE ESTIMATES ONLY AND ARE NOT ADJUSTED FOR SHRINKAGE, CONSOLIDATION, AND CLEARING LOSS FACTORS. THESE QUANTITIES ARE TO BE USED FOR BONDING AND PERMIT PURPOSES ONLY.
2. CUT/FILL SLOPES ARE SHOWN NO STEEPER THAN 3:1.
3. PRELIMINARY EARTHWORK QUANTITIES ASSUME ONSITE MATERIAL IS ADEQUATE FILL. ASSUMPTIONS ARE TO BE CONFIRMED BASED ON GEOTECH RECOMMENDATIONS.
4. EARTHWORK QUANTITIES DO NOT INCLUDE GEN-TIE LINE.

SYSTEM SUMMARY	
ESS TYPE	SOLBANK
ESS QUANTITY	1000
PCS UNITS	140
BATTERY CAPACITY	400 MW/3200 MWH
BESS YARD	13.2 ACRES
PROJECT SUBSTATION	8.1 ACRES
ACCESS ROADS	7.2 ACRES
LAYDOWN YARD (INCLUDING O&M BUILDING)	8.0 ACRES
STORMWATER AREAS*	9.3 ACRES
OTHER**	6.2 ACRES
TOTAL PROJECT AREA	52.0 ACRES
TOTAL DISTURBED AREA***	57.0 ACRES

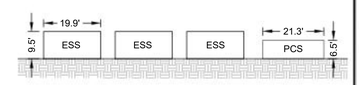
NOTE:
* PRELIMINARY STORMWATER TREAMENT AND STORAGE SIZING BASED ON ALAMEDA COUNTY STANDARDS
** INCLUDES SLOPED AREAS
*** TO GRADING DAYLIGHT

ABBREVIATIONS:

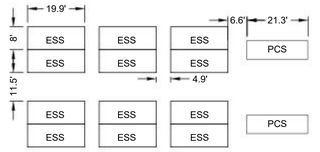
ESS	ENERGY STORAGE SYSTEM
PCS	POWER CONVERSION SYSTEM
POI	POINT OF INTERCONNECTION
XMFR	TRANSFORMER

GENERAL NOTES:
FUTURE STEEL FRAME O&M BUILDING (100'X50') WILL BE LOCATED WITHIN PROPOSED LAYDOWN YARD. EXACT BUILDING SIZE AND LOCATION TBD.

FIRE NOTES:
1) FIRE APPARATUS ACCESS ROADS SHALL HAVE AN UNOBSTRUCTED WIDTH OF NOT LESS THAN 20 FEET.
2) INTERNAL RADII = 25' MINIMUM.



INSET A - ELEVATION



INSET A - PLAN

UTILITY STATEMENT
LOCATION OF EXISTING UNDERGROUND UTILITIES HAVE BEEN TAKEN FROM DRAWINGS AND FIELD LOCATES SUPPLIED BY THE APPROPRIATE UTILITY COMPANIES. UTILITY LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. PRIOR TO BEGINNING ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EACH UTILITY.

100 50 0 100 200
SCALE: 1 INCH = 100 FEET

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POTENTIA-VIRIDI BATTERY ENERGY STORAGE SYSTEM

LEVY ALAMEDA, LLC

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

PROJ. NO.	232059
DRAWN	LB
CHECKED	RB
DATE	12/8/23

SHEET TITLE:

CIVIL SITE PLAN

SHEET NO:

C-1.0

SHEET 4 OF 7