Appendix H2. Electrical Power Load and Routing Study (Final Draft)

1. Introduction and Purpose

The California Department of Water Resources (DWR) issued the Delta Conveyance Project (Project) Environmental Impact Report (EIR) and selected the Bethany Reservoir Alignment (DWR, 2023). The Project would include new intake facilities located along the Sacramento River between Freeport and the confluence of the Sacramento River with Sutter Slough. The Project facilities would also include a tunnel to convey water from the new intakes to a new pumping plant which would pump water and discharge to the existing State Water Project (SWP) Bethany Reservoir.

To construct and operate the Project, various power supplies would be needed. The existing power grid as well as new lines would be required to provide the power infrastructure necessary for this Project. The purpose of this technical memorandum (TM) is to:

- Describe the existing power supply network in the Project area
- Define the Project power needs, including load and specific facilities required
- Identify potential power supply sources
- Describe networks that could be used to bring that power to the point of use, including new transmission, defined here as being 60 kilovolt (kV) or higher, and distribution, less than 60 kV, lines

The location of new power facilities described in this TM were sited based on collaboration efforts between potential utility providers and DWR which have occurred during the planning of this Project and/or previous project iterations. This document summarizes information provided to DWR to support their environmental analysis and does not include any information discussed with utility providers after 2023. The basis of these efforts was to minimize the area disturbed by the new power facilities. However, the information described below and presented in Attachment 1 is preliminary, based on assumptions explicitly noted. It is intended to be used to support the development of the estimated footprint of disturbed areas associated with the power facilities and to identify potential construction effects. This information also would serve as a conceptual basis for ongoing and future collaboration with utility providers. Assumptions and proposed alignments will need to be verified and approved by expected utility providers, and detailed design information will be developed in future design phases in close coordination with those service providers.

The EIR and subsequent documentation describe existing conditions for these power networks and anticipated Project benefits and impacts.

1.1 Organization

This TM is organized as follows:

- Introduction and Purpose
- Conceptual Development Criteria
- Existing Electrical Supplies in the Project Area
- Estimated Power Loads
- Proposed Electrical Facilities
- Circuit Breakers
- Power Supply Alignments

- References
- Attachment 1 – Delta Conveyance Project Power Supply

2. Conceptual Development Criteria

The Project is currently undergoing conceptual design, and it is expected that Project details may change as the design process progresses, as will the existing conditions of the power grid prior to the start of construction. Given the evolving nature of the Project design details, and the stated purpose of this TM in Section 1, several assumptions were established, as follows.

It is assumed most proposed Project power infrastructure would be installed underground, subject to the requirements of the infrastructure owner, and primarily within proposed improved county roads and new haul roads until reaching the nearest existing overhead power pole. At that point, the new line would be connected to the existing system, or, in some cases, , the nearest transmission line(s). Some new lines may be trenched adjacent to or across existing roadways that would otherwise not be disturbed by Project construction. These instances are noted under the respective facilities.

To minimize construction of new power lines, the ability to use or replace (re-power) existing power lines was considered. Some of the facilities would be located in areas not currently served by existing power lines; therefore, either new power poles with lines or underground conduit would be installed to serve those areas. Except when explicitly noted, it is assumed existing power infrastructure has sufficient capacity to supply proposed Project facilities. However, some Project facilities are expected to require more capacity than the current electrical lines located near the construction sites could provide. In these cases, it is assumed that new power lines will be routed to the nearest substation, which may also need equipment upgrades to accommodate to added load. The specific assumptions for each Project facility are described in Sections 7.1 and 7.2.

There are several different methods to extend power connections to the Delta Conveyance facilities, including:

- **Replacement or addition of new lines within the existing distribution/transmission corridors on existing power poles/towers.** Installation of new lines would generally occur within the existing easement using boom trucks, utility trucks, and lattice. Use of the boom trucks would allow replacement of lines on poles separated from a roadway by a drainage ditch. It is assumed a 50-square foot area at each existing power pole would be temporarily disturbed for staging during installation. If necessary, existing poles/towers would be replaced or modified. Power lines would be de-energized during the construction period each day. Construction methods and service interruptions should be consistent with the requirements of the distribution/transmission owner and service provider whose infrastructure and service would be impacted.
  - Helicopters may be used to install connections or extend high voltage transmission lines in, or around, the Bethany Complex.
- **Moving existing or addition of new above-ground power poles/towers**. Installation of new low-voltage power poles and lines would generally occur within a 25-foot wide area, while high-voltage lines would occur within a 150-foot wide area. This area would allow for drilling of the foundations, installation of the poles and towers, and stringing of the lines with trucks, staging flatbed trucks to haul the poles, and operating boom trucks to string the line. An additional 1,000-square foot for staging at each new pole, assumed to be 250 feet apart for low-voltage lines and 1,250 feet for high-voltage lines, is also assumed. The new lines would be connected to the existing lines using boom trucks and utility trucks, and a permanent 25-foot and 150-foot wide easement or right-of-

way (ROW) agreement (for existing roadways) is also assumed for low- and high-voltage lines, respectively. Construction methods and service interruptions should be consistent with the requirements of the distribution/transmission owner and service provider whose infrastructure and service would be impacted.

- New above ground transmission lines on existing poles would be needed from the Franklin Substation, along Franklin Boulevard to Lambert Road. From the intersection of Lambert Road and Franklin Boulevard, these transmission lines would be extended underground to the Lambert Batch Plant complex, the intakes, and the Twin Cities Complex.
- New above-ground high voltage transmission lines would be needed to serve the Bethany Complex. Very short (100-200 feet) transmission lines would be needed to connect between a new substation and the existing overhead transmission lines for service to Lower Roberts Island and Bethany Complex.
- Helicopters may be used to install connections or extend high voltage transmission lines in, or around, the Bethany Complex.

- **Installation of new underground power cables**. Construction of underground power cables would generally occur within a 25 to 40-foot wide work area and include excavation of a trench for constructing a ductbank and utility vaults. The trench would be backfilled above the ductbank and the ground surface would be restored. The cable would be pulled through the conduits in the ductbank. Utility vaults required for access would be exposed at-grade and spaced approximately every 1,000 feet. These vaults would be approximately 8 feet by 16 feet and contained within the permanent easement. Horizontal directional drilling could be used under waterways, freeways, major drainage infrastructure, and beneath sensitive wildlife areas. Excavated trenches would be about 4 to 10 feet deep and dewatering would not be anticipated in most areas. When needed, dewatering would include simple sumping of the trench excavation in most cases. New underground power, permanent or temporary, would require a 25-foot dedicated easement for locations outside of Project facility site boundaries. These easements would not be shared with CalTrans or county easements unless otherwise noted, such as in locations where this is not feasible; these locations are noted under the respective facility power alignment descriptions.
- **Abandonment in-place**. When power is installed underground for construction but not needed for Project operations, as in the case of the Lambert Road Batch Plants and the park-and-ride facilities, it is assumed the lines would be de-energized and abandoned in-place. This would not require long-term maintenance of the 25-foot easement.

Much of the Project area is located within identified habitat and foraging area for Greater Sandhill Cranes. The Greater Sandhill Crane is classified as a Threatened species under the California Endangered Species Act and is a fully protected species in California. In order to avoid impacts to habitat or disrupt migration patterns for the special-status species, the Project proposes to not install additional overhead power lines in sensitive areas. Additionally, due to these same concerns, helicopters would not be used in the Project area located north of State Route (SR) 4. Helicopters may, however, be used to install connections or extend high voltage transmission lines in, or around, the Bethany Complex.

3. Existing Electrical Supplies in the Project Area

Electrical power is available in the Project area from many utility providers, including Sacramento Municipal Utility District (SMUD) in Sacramento County and Western Area Power Administration (WAPA) and Pacific Gas & Electric Company (PG&E) throughout the Project area. High-voltage transmission lines in the Project area that are anticipated to be utilized by the Project during construction and/or operation are owned and maintained by SMUD, PG&E, and WAPA, as shown in Figure 3.1. Additional providers own and operate power facilities within the Project area; however, given that their services are not anticipated to be utilized, they are not shown on the figure.

SMUD owns and operates components of the commercial power grid in the northern portions of the Project area within Sacramento County. The SMUD system consists of transmission lines, powerplants, major substations, and distribution lines between substations and customer connections. SMUD serves most residential, business, and agricultural interests within the Project area in Sacramento County, including intake sites, tunnel shaft sites, park-and-ride lots, and batch plants. The existing power lines are primarily located on above-ground power poles.

PG&E owns and operates components of the power grid across northern and central California, including the Project area. PG&E's system consists of transmission lines and distribution lines. PG&E serves residential, business, and agricultural interests in the Project area.

WAPA was created under the U.S. Department of Energy to market and transmit electric power throughout 15 western states from federal dams with hydropower facilities. The federal power facilities generate power for the federal project uses. WAPA markets the surplus power on a wholesale basis to federal agencies, military bases, municipalities, public utilities districts, irrigation and water districts, and state agencies under Preference Power contracts. WAPA operates the Federal transmission lines to provide power to their contractors, including high-voltage transmission lines that extend generally in the north-south direction in the Project area.

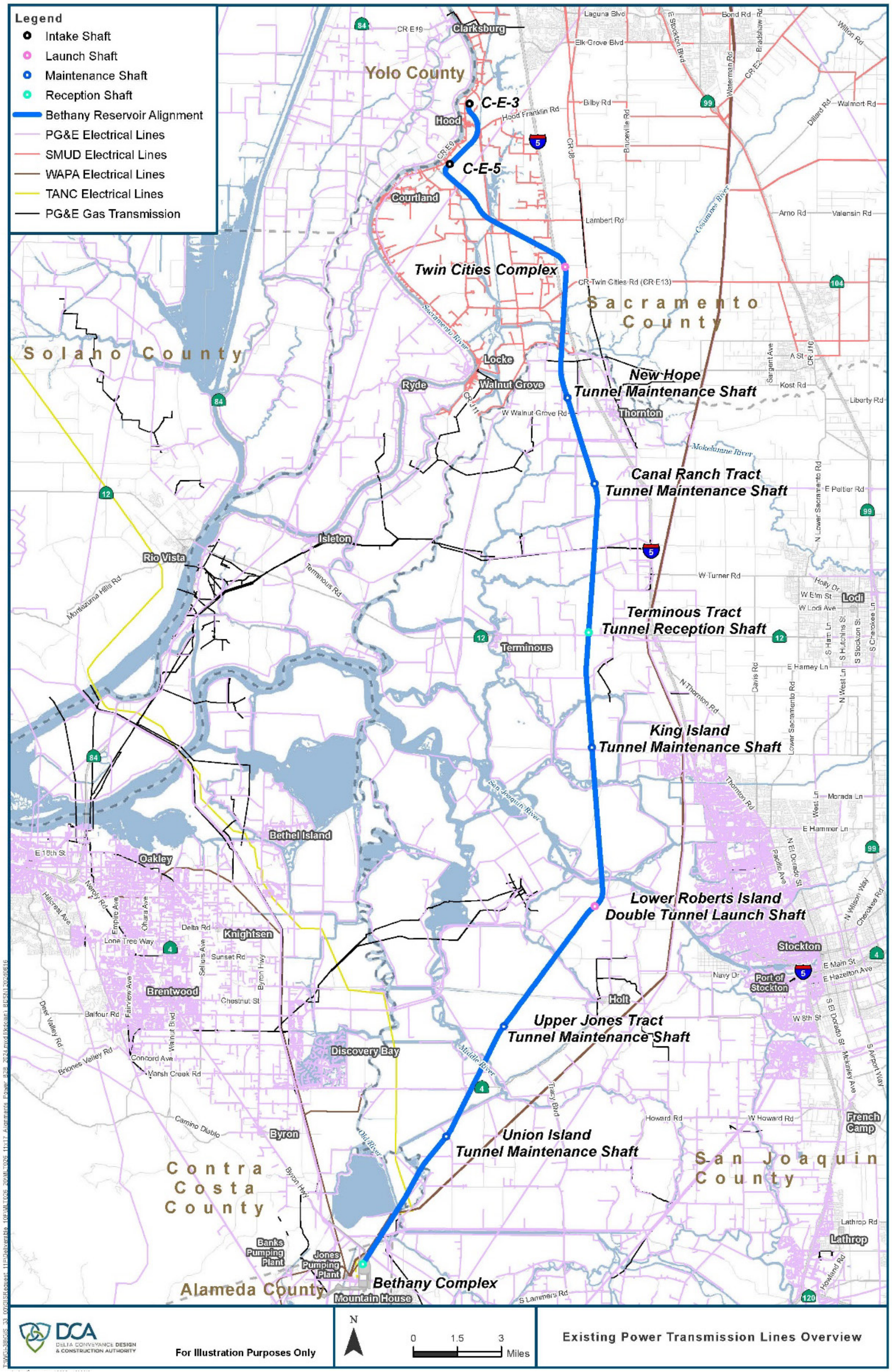


Figure 3.1. Existing Electrical Power Infrastructure in Project Area

4. Estimated Power Loads

Power demand during construction would include support for large equipment, such as cranes and ground improvement machines, tunnel boring machines and associated equipment including conveyors and pumps, small tools, and construction-support facilities. Support facilities would include, but not be limited to, construction trailers, temporary lighting, and electric vehicle charging stations. Much of this equipment could be powered by onsite generators or internal combustion engines; however, use of electrical grid service to the sites, if available, would be more efficient, use less diesel fuels, and produce fewer emissions.

Power demand during operations would include power for mechanical equipment (such as operable gates, cylindrical tee screen cleaners, pumps), sensors and supervisory control and data acquisition (SCADA) systems, and power for onsite buildings and lights.

Table 4.1 summarizes the power demand assumptions for construction of the key feature facilities for the Delta Conveyance Project, and Table 4.2 presents the power demand assumptions for operations.

Table 4.1 Electrical Power Load Assumptions for Construction of Key Features

Facility	Load (kVA)
Intake C-E-3	8,000
Intake C-E-5	8,000
Lambert Road Concrete Batch Plants	8,000
Twin Cities Complex Double Tunnel Launch Shaft[a]	58,000
Lower Roberts Island Double Launch Shaft[a]	59,000
New Hope Tract Maintenance Shaft	1,000
Canal Ranch Tract Maintenance Shaft	1,000
Terminus Tract Reception Shaft	1,000
King Island Maintenance Shaft	1,000[a]
Upper Jones Tract Maintenance Shaft	1,000
Union Island Maintenance Shaft	1,000
Bethany Reservoir Pumping Plant and Surge Basin (including Batch Plants)	12,750
Bethany Reservoir Aqueduct and Bethany Reservoir Discharge Structure	15,200
Hood-Franklin Park and Ride Lot	358
Charter Way Park and Ride Lot	355
TOTAL (kVA)	**174,663**

[a] Includes power for two tunnel boring machines (TBMs)
Notes:
cfs = cubic feet per second
kVA = kilovolt ampere(s)

Table 4.2 Electrical Power Load Assumptions for Operation of Key Features

Facility	Load (kVA)
Intake C-E-3	4,000
Intake C-E-5	4,000
Lambert Road Concrete Batch Plants	Not applicable
Twin Cities Complex Double Tunnel Launch Shaft	1,000[a]
Lower Roberts Island Double Launch Shaft	1,000[a]
New Hope Tract Maintenance Shaft	1,000[a]
Canal Ranch Tract Maintenance Shaft	1,000[a]
Terminus Tract Reception Shaft	1,000[a]
King Island Maintenance Shaft	1,000[a]
Upper Jones Tract Maintenance Shaft	1,000[a]
Union Island Maintenance Shaft	1,000[a]
Bethany Reservoir Pumping Plant and Surge Basin	193,532
Bethany Reservoir Aqueduct and Bethany Reservoir Discharge Structure	500
Hood-Franklin Park and Ride Lot	Not Applicable
Charter Way Park and Ride Lot	Not Applicable
TOTAL (kVA)	**209,032**

[a] Normal maintenance and reception shaft post-construction load would be less than 50 kVA; however, maximum load expected during infrequent maintenance activities (occurring approximately every 10 years) shown to provide maximum operational loads.

5. Proposed Electrical Facilities

Due to the power load required for many of the Project facilities, as presented in detail in Section 4, as well as the need to step-down existing power to lower voltage levels required for facilities and equipment, several sites will require installation of onsite electrical facilities, including substations and switchyards for high-voltage lines and metering areas for lower voltage lines. The permanent footprints for these facilities are assumed to be sized as presented in Table 5.1.

Table 5.1. Electrical Facility Types and Sizes

Substation Type	Substation Footprint	Switching Station Type	Switching Station Footprint	Metering Area Type	Metering Area Footprint
69-kV	135 feet by 62 feet	Single downstream load circuit	30 feet by 70 feet	Onsite	25 feet by 25 feet
230-kV	344 feet by 186 feet	Double downstream load circuits	60 feet by 70 feet	At connection to existing overhead	25 feet by 25 feet

Substation Type	Substation Footprint	Switching Station Type	Switching Station Footprint	Metering Area Type	Metering Area Footprint
		Triple downstream load circuits	90 feet by 70 feet		

Notes:
kV = kilovolt

Table 5.2 presents the location of each type of facility.

Table 5.2. Proposed Electrical Facilities

Facility	Substation	Switchyard	Metering Area	Other
Intake C-E-5	69-kV onsite substation—Intake C-E-5	Double downstream load circuits, low-profile switching station—intake haul road (feeds Intake C-E-5 and line to Intake C-E-3)	Not Applicable	Onsite transformers, ≤69 kV, quantity TBD
Lambert Road Concrete Batch Plants	69-kV onsite substation—Lambert Road Concrete Batch Plant	Triple downstream load circuits, low-profile switching station (feeds batch plants, Twin Cities site, and intakes)	Not Applicable	Onsite transformers, ≤69 kV, quantity TBD
				Improvements to existing utility substation
Twin Cities Double Tunnel Launch Shaft	69-kV onsite main distribution substation	Not Applicable	Not Applicable	Onsite transformers, ≤69 kV, quantity TBD
	Two 69-kV onsite substations—tunnel launch shafts (north and south)	Not Applicable	Not Applicable	Not Applicable
	Two 69-kV onsite substations—RTM storage and management (north and south)	Not Applicable	Not Applicable	Not Applicable
New Hope Tract Tunnel Maintenance Shaft	Not Applicable	Not Applicable	Onsite	Onsite transformer
Canal Ranch Tract Tunnel Maintenance Shaft	Not Applicable	Not Applicable	At connection to existing overhead	Onsite transformer
Terminous Tract Tunnel Reception Shaft	Not Applicable	Not Applicable	Onsite	Onsite transformer

Facility	Substation	Switchyard	Metering Area	Other
King Island Tunnel Maintenance Shaft	Not Applicable	Not Applicable	At connection to existing overhead	Onsite transformer
Lower Roberts Island Double Tunnel Launch Shaft	230-kV substation—House Road	Not Applicable	Not Applicable	Onsite transformers, ≤69 kV, three SF_6 circuit breakers
	69-kV onsite substation—tunnel launch shaft	Not Applicable	Not Applicable	Not Applicable
Upper Jones Tract Tunnel Maintenance Shaft	Not Applicable	Not Applicable	Onsite	Onsite transformer
Union Island Reception Shaft	Not Applicable	Not Applicable	Onsite	Onsite transformer
Bethany Reservoir Pumping Plant and Surge Basin	230-kV onsite substation and switchyard	Not Applicable	Not Applicable	Seven permanent SF_6 circuit breakers, one construction-phase, temporary SF_6 circuit breaker
	Three 69-kV onsite, temporary substations—contractor staging (2), batch plant (1)	Not Applicable	Not Applicable	
Bethany Reservoir Discharge Structure	Not Applicable	Not Applicable	West of Mountain House Road	Onsite transformers, ≤69 kV, quantity TBD
Hood-Franklin Park & Ride	Not Applicable	Not Applicable	Onsite	Onsite transformer
Charter Way Park & Ride	Not Applicable	Not Applicable	Onsite	Onsite transformer

Notes:
< = less than
PG&E = Pacific Gas and Electric Company
SMUD = Sacramento Municipal Utility District
TBD = to be determined
WAPA = Western Area Power Administration

6. Circuit Breakers

In addition to new electrical facilities, many of the sites would require the installation of new circuit breakers to protect new electrical circuits. For all power lines with a capacity lower than 230 kV, vacuum circuit breakers would be used. These types of circuit breakers use air to cool the arc. Because vacuum circuit breakers do not contain greenhouse gas (GHG)-emitting materials, and they will be entirely contained within the permanent disturbance areas for proposed Project facilities, the total number required and location of each would be defined during a future design phase. At this time, vacuum circuit breakers are not available for 230 kV circuit breakers, so for all proposed power lines with a voltage capacity of 230 kV, it is assumed that sulfur hexafluoride (SF_6) gas circuit breakers would be used. As the name suggests, this type of circuit breaker uses SF_6 to cool the arc in the circuit. These would be installed within the permanent disturbance areas for proposed Project facilities. However, if new technology, i.e. a non-GHG emitting high-voltage circuit breaker, is commercially available at the time of construction, the Project would utilize the best available technology.

Because the majority of new power lines required for the Project have a capacity of 69 kV or less, as presented in Table 5.2, the number of SF_6 circuit breakers required for construction and operation of the Project would be limited to ten during the operating phase, four during construction. Three would be located at the 230-kV substation at the main PG&E/WAPA transmission line that is the power source for the Lower Roberts Island Double Tunnel Launch Shaft; these would be active during both construction and operation. During the operating phase, seven SF_6 circuit breakers would be located at the 230-kV onsite main distribution substation and switchyard at the Bethany Reservoir Pumping Plant, and. During construction, one SF_6 circuit breaker would be operated at the Bethany Complex but would be decommissioned before the operating phase.

7. Power Supply Alignments

This section summarizes the preliminary, proposed alignments to provide power to facilities for the Delta Conveyance Project. These approaches have not been discussed with the power companies, and are, therefore, subject to change. DWR is leading the discussions with SMUD, PG&E, and WAPA.

7.1 Intake C-E-3

It is assumed that the existing power lines would not provide adequate capacity for the loads required for construction and operation of the intake. Therefore, new power would be routed to the site as presented in Attachment 1.

Power to Intake C-E-3 would be routed to the onsite substation in the site access road and intake haul road to an above-ground, low-profile, double-circuit switching station, located on the southwest quadrant of the intersection of the intake haul road and the Intake C-E-5 site access road. Conduits would continue to be installed along the western edge of the roadway to allow for a 25-foot, dedicated permanent easement. This segment would span a total of approximately 2.2 miles.

As noted in Section 5, Intake C-E-3 would require the installation of a new, onsite substation, that would require one SF_6 circuit breaker.

Between Intake C-E-3 and C-E-5, two existing overhead lines that currently cross over the haul road route would need to be relocated due to the height of the power lines and the assumed height of construction equipment and materials that would access this road. To minimize the risk of disruption, the overhead lines that would cross the road would be put underground west of the roadway and brought back overhead on the east side of the roadway, requiring the installation of one new pole at each of two locations in this segment. In total, the relocated non-Project power, which are all 12 kV lines, would require trenching of approximately 200 linear feet outside the proposed haul road. When including a 50-square foot disturbance area for each of the new poles on the eastern side of the roadway, this would temporarily impact approximately 0.10 acre which would be restored to existing conditions following installation.

Several existing overhead 12-kV power lines owned by SMUD are located within the Intake C-E-3 site location. The existing power lines and associated poles would need to be relocated during construction of the intakes, as presented in Attachment 1. The new alignment of non-Project power at Intake C-E-3 would span a total length of approximately 1.4 miles. At the north end of the site, 0.15 mile of the new 12-kV conduit would be installed north of an existing access road, then approximately 0.75 mile would be trenched along the western side of the intake haul road, allowing for a 25-foot dedicated easement, as described in Section 2, along the same alignment as the power supply for the intake. The final approximately 0.5 mile of relocated power would be installed overhead along in an existing local access route running west from the haul roadway before connecting to an existing overhead power line. More than half of this segment has existing overhead, but it is assumed the poles would not accommodate the relocated power and would therefore need to be upgraded. This would be located outside of the site disturbance area, on an unpaved roadway. Assuming the poles would be spaced approximately every 250 feet, this would require the installation of 11 new poles and would result in a temporary impact of approximately 1.9 acres, and a permanent utility easement spanning approximately 1.6 acres, though much of this would be located within the existing utility easement. This segment would be restored to existing conditions following installation of the new conduit.

7.2 Intake C-E-5

Power would be routed to Intake C-E-5 would be routed from a proposed substation near the intersection of Lambert Road and Franklin Boulevard. From the onsite substation at the intake site, power would be installed underground into the site access road to the low-profile switching station at the intake haul road, then follow the intake haul road to Lambert Road, then east outside the Lambert Road right-of-way to a proposed switchyard at the Lambert Batch Plants, on the southwest quadrant of the intersection with Franklin Boulevard. This alignment would span approximately 6.2 miles in total. For the portion of Lambert Road which crosses over Stone Lakes and the undercrossing of I-5, approximately 0.3 mile in total for both segments, the conduit would be installed via trenchless methods, i.e. horizontal direction drilling. From the Lambert Road Concrete Batch Plants switchyard, power would be installed underground to the existing overhead power just east of Franklin Boulevard at Lambert Road. From there, a new 69 kV-line would be installed on existing overhead power poles to SMUD's Franklin Substation, approximately 3.9 miles north of the intersection. The route generally follows Franklin Boulevard on the eastern side of the roadway, though this existing alignment does diverge from and cross the road for short segments. The whole alignment is shown in Attachment 1.

Similar to the Intake C-E-3 location, there are several existing overhead 12-kV power lines owned by SMUD located within the Intake C-E-5 site location that would need to be relocated, and it is assumed existing power lines at the site would not provide adequate capacity for the loads required for construction and operation of the intake.

As noted in Section 5, Intake C-E-5 would require the installation of a new, onsite substation, and the site would also require the installation of a new switching station at the junction of the intake haul road, on the southeast parcel. The onsite substation would require one SF_6 circuit breaker and the switching station at the haul road switchyard.

South and east of Intake C-E-5, there are no additional existing overhead lines that currently cross over the haul road route would need to be relocated due to the height of the power lines.

Approximately 1.1 mile of existing overhead power at C-E-5 would be abandoned. To provide power to the adjacent residences and agricultural facilities currently powered by these power lines, 0.7 mile of new underground power would be installed onsite, adjacent to SR 160. The underground power would be moved with the roadway when SR 160 is relocated during construction of the intake. However, this would provide only temporary power during construction of the intakes. Once the intakes are constructed, the relocated 12-kV non-Project power line would be installed adjacent to the new SR 160 alignment which would be constructed as part of Project construction. The underground line would be situated on the intake site such that SMUD could have reasonable access to it outside the state highway right-of-way. DWR would coordinate with SMUD regarding easement feasibility through this area. All of these impacts would be contained within the site disturbance boundary.

7.3 Lambert Road Temporary Concrete Batch Plants

Two concrete batch plants would be constructed on the northwest quadrant of the intersection of Lambert Road and Franklin Boulevard which would require a new 4,160 v power supply. Although SMUD operates 60-kV power lines along both Lambert and Franklin, it is assumed that the batch plants would connect to a new line dropped from the proposed 69-kV line to be installed for the intakes and Twin Cities launch shaft site. This connection would be essentially the same as the Intakes and the Twin Cities site and would be made via the onsite triple circuit switchyard and extend to the existing power pole with the new 69-kV circuit at the intersection of Lambert Road and Franklin Boulevard, and is presented in Attachment 1. This would require trenching approximately 1,100 linear feet into Lambert Road though this disturbance would be contained within lands already being disturbed for other facilities. Onsite power would be routed within the site boundary. As noted in Section 6, the new triple-circuit high-voltage switchyard and 69-kV step down substation/transformer would contain a total of four SF_6 circuit breakers, in addition to the one for the connection at the existing Franklin Substation.

7.4 Twin Cities Dual Launch Shaft

Approximate power demands at the Twin Cities dual launch shaft site are summarized in Table 7.1.

Table 7.1. Preliminary Estimate of Power Required for Twin Cities Dual Launch Shaft Site

Equipment Description	Load (kVA)
TBM and Trailing Gear Earth Pressure Balance (EPB)[a]	40,000
Tunnel Ventilation Fans	7,400
Water Cooling Plant	500
Foam Plant	500
Conveyor (Tunnel)	4,960
Conveyor (Surface)	460
Tunnel Lighting	350
Shaft Pumps	200
Compressed Air Plant	1,600
Main Hoist and Shaft Elevator	70
Shaft Gantry Crane	400
Shop Facilities	300
RTM Dryers	3,420

Equipment Description	Load (kVA)
Water Treatment	200
Change House	40
Office Trailers	140
Yard Lighting	80
Miscellaneous	500
Recommendation	**62,000**

[a] Includes power for two tunnel boring machines (TBMs)

Notes:
EPB = earth-pressure balance
kVA = kilovolt ampere(s)
RTM = reusable tunnel material
TBM = tunnel boring machine

An existing overhead 69 kV-line, owned by SMUD, is located along Franklin Boulevard adjacent to the eastern perimeter of the Twin Cities Road dual launch shaft and rail depot site boundary. An additional existing 12-kV power line owned by SMUD parallels Dierssen Road through the site.

It is assumed that neither existing line adjacent to the site would have adequate capacity for the tunnel construction activities. Because of the significant power load required at this location, a new Twin Cities Complex substation on the northwestern quadrant of the intersection of Dierssen Road and Franklin Boulevard would be installed. This proposed substation would be used to provide power to onsite facilities, including shaft construction and the rail-served materials depot to be located within the eastern portion of the site. To power the Twin Cities substation, a 69-kV line would be trenched from the substation east to Franklin Boulevard, and approximately 1.6 miles north in a new SMUD easement adjacent to Lambert Road to the intersection with Lambert Road. At this location, the line would connect with the existing overhead (through the Lambert Batch Plants switchyard) and extend overhead on the existing power lines the remainder of the distance to SMUD's Franklin Substation, along the same route as described for the intakes.

Underground power from the proposed Twin Cities substation to the onsite launch shaft would be Project-owned and contained within a 25-foot dedicated easement along the north side of Dierrsen Road or within the site disturbance boundary. Underground power from the proposed Twin Cities substation to the RTM management site would cross Dierssen Road and continue south onto the site. This segment would be de-energized and abandoned in-place after construction. This configuration is presented in Attachment 1. As noted in Section 5, the Twin Cities Substation would require one SF_6 circuit breaker, and each of the launch shafts and RTM management areas would require one, for a total of five at this site.

7.5 New Hope Tract Tunnel Maintenance Shaft

An existing overhead 11-kV line owned by PG&E is located along North Blossom Road to the east of New Hope Tract tunnel maintenance shaft location, and another 11-kV line to the west of the tunnel shaft location. It is assumed the existing power lines could provide adequate capacity for the construction and operation loads at the tunnel shaft. To access this power supply, a new underground ductbank would be installed into the proposed access road for the site. This would require approximately 0.3 mile of joint trenching east from the site to Blossom Road, then approximately 55 linear feet would be trenched within the Blossom Road ROW on the west side of the roadway, before the line would connect to an existing overhead line. This alignment is presented in Attachment 1. The temporary disturbance area for the portion of conduit that would be installed outside of an area already disturbed by the Project would be approximately 0.04 acre. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be contained onsite.

7.6 Canal Ranch Tract Tunnel Maintenance Shaft

An existing overhead 11-kV line owned by PG&E is located adjacent to West Peltier Road, west of the Canal Ranch Tract tunnel maintenance shaft location.

It is assumed this power line could provide adequate capacity for the construction and operation loads at the tunnel shaft. To access the existing overhead, a new underground ductbank would be installed in West Peltier Road, west from the site. This would require 0.6 miles of trenching in West Peltier Road that would not otherwise be required for the Project, and an additional 50 linear feet outside the roadway to an existing power pole. In total, with a 30-foot wide disturbance area and a 50 square foot staging area, this would temporarily impact approximately 2.2 acres, though all but 0.03 acre would occur on an already disturbed area. The alignment is presented in Attachment 1. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be located at the connection to the existing overhead.

7.7 Terminous Tract Tunnel Reception Shaft

An existing overhead 11-kV line owned by PG&E is located along SR 12, which directly passes the Terminous Tract site. It is assumed that the existing power lines could provide adequate capacity for the construction and operation loads at the tunnel shaft. Because of the proximity to an existing power pole, no off-site disturbance would be required. A short section of the existing overhead power line would be relocated underground to avoid overhead clearance issues at the entrance to the site. The work would be conducted within the disturbance area already identified for the site. This is presented in Attachment 1. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be contained onsite.

7.8 King Island Tunnel Maintenance Shaft

Similar to the Terminous Tract site, an existing overhead 21-kV line owned by PG&E located along West Eight Mile Road directly passes the King Island site. Also, there is an existing power pole within the site disturbance boundary. Therefore, assuming the existing power lines could provide adequate capacity for the construction and operation loads at the tunnel shaft, no off-site disturbance would be required. This is shown in Attachment 1. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be located at the connection to the existing overhead.

7.9 Lower Roberts Island Tunnel Double Launch Shaft

Table 7.2 lists approximate power demands at the Lower Roberts Double Tunnel Launch Shaft site and all other launch shaft locations.

Table 7.2. Preliminary Estimate of Power Required for Lower Roberts Island Double Launch Shaft Site

Equipment Description	Load (kVA)
TBM and Trailing Gear (EPB)[a]	40,000
Tunnel Ventilation Fans	7,400
Water Cooling Plant	500
Foam Plant	500
Conveyor (Tunnel)	4,820
Conveyor (Surface)	1,080
Tunnel Lighting	300
Shaft Pumps	200
Compressed Air Plant	1,600
Main Hoist and Shaft Elevator	70
Shaft Gantry Crane	400
Shop Facilities	300
Water Treatment	200
Change House	40
Office Trailers	140
Yard Lighting	80
Miscellaneous	500
Recommendation	**59,000 kVA**

Notes:
[a] Includes power for two tunnel boring machines (TBMs)
EPB = earth-pressure balance
kVA = kilovolt ampere(s)
RTM = reusable tunnel material
TBM = tunnel boring machine

There are two existing overhead lines owned by PG&E that transect the Lower Roberts Island Double Tunnel Launch Shaft site. The line that runs north-south is 21 kV, and the one that runs east-west is 11 kV west of the north-south line and 21 kV east of the line. It is assumed these lines would not provide adequate power to the site. There are two 230-kV transmission lines owned by WAPA and one 230-kV line owned by PG&E to the east of the Lower Roberts Island Double Tunnel Launch Shaft site.

To provide adequate power to the Lower Roberts Island construction sites, a new substation would need to be constructed with a connection to one of the existing, western 230-kV overhead transmission line running generally northeast-southwest, either WAPA's or PG&E's, using overhead lines. This substation would be 230 kV to 69 kV; matching the supply-side power voltage and stepping down the voltage onsite to provide 69 kV power to the Project facilities. The connection would include two to three new power poles, spanning a total length of 300 linear feet. Due to environmental concerns, helicopters would not be used to feed a new line into the proposed substation; installation would be done using cranes and boom trucks.

From the new substation, approximately 0.25 mile of new underground power would be joint trenched into the substation access road running north from the site before reaching West House Road to provide power to medium and low voltage transformers at the reusable tunnel material (RTM) storage and rail access areas on the northeast side of the island, just south of Vulcan Island. An additional 1.3 miles would be joint-trenched into a new proposed access road that would connect West House Road to the tunnel shaft location. This roadway would include a new roadway over an existing water feature, and the conduit would be installed on the side of the bridge. The conduit would be connected to a new substation at the double tunnel launch site. This layout is presented in Attachment 1. As noted in Section 6, the new PG&E or WAPA 230-kV substation as well as the substation at the launch shaft would contain a combined total of three SF_6 circuit breakers.

7.10 Upper Jones Tract Tunnel Maintenance Shaft

An existing overhead 11-kV line owned by PG&E spans Upper Jones Tract on West Bacon Island Road, along the southern perimeter of the site disturbance boundary.

DCA assumes the existing power line could provide adequate capacity for the construction and operational loads at the tunnel shaft. Because of the proximity to an existing power pole, no offsite disturbance would be required. A short section of the existing overhead power line would be relocated underground to avoid overhead clearance issues at the entrance to the site. The work would be conducted within the disturbance area already identified for the site, and the 25-foot-by-25-foot metering area for this site would also be contained onsite. Attachment 1 provides this alignment.

7.11 Union Island Tunnel Reception Shaft

An existing overhead 11-kV line owned by PG&E is located along Bonetti Road along the eastern boundary of the Union Island Tunnel Reception Shaft site. DCA assumes the existing power lines could provide adequate capacity for the construction and operation loads at the tunnel shaft. Because of the proximity to an existing power pole, no offsite disturbance would be required. A short section of the existing overhead power line would be relocated underground to avoid overhead clearance issues at the entrance to the site. The work would be conducted within the disturbance area already identified for the site, and the 25-foot-by-25-foot metering area for this site would also be contained onsite. Attachment 1 shows this alignment.

7.12 Bethany Reservoir Pumping Plant and Surge Basin

There are several existing high-voltage overhead power lines located near the Bethany Complex, including two 230-kV overhead transmission lines owned by WAPA and a 500-kV transmission line owned by the Transmission Agency of Northern California (TANC) located just outside the northwest Bethany Reservoir Pumping Plant site boundary and paralleling its western boundary, approximately 500 feet west of Mountain House Road. These transmission lines originate at the Tracy Substation, which is owned and operated by WAPA and is on the corner of Mountain House and Kelso Roads. PG&E also has a high-voltage substation in Brentwood along Sellers Avenue.

Due to the high load required at the Bethany Reservoir Pumping Plant, the facility cannot receive power through a connection to existing overhead transmission lines like many other sites; rather, it must connect directly to a substation. Although it is possible that PG&E could be the ultimate utility provider, at this time, it is assumed WAPA would be the provider, and the Bethany Complex would connect to WAPA's Tracy substation adjacent to the site. Attachment 1 provides the proposed alignment, which is discussed here.

To connect to WAPA's Tracy Substation, new 230-kV switching equipment would be installed in a new switchyard on the Bethany Complex, immediately east of Mountain House Road. This facility would span approximately 1.4 acres but is included in the permanent site footprint for the Bethany Reservoir

Pumping Plant and surge basin area. The new permanent switchyard would connect to the existing Tracy Substation with a new, approximately 600-foot, overhead line across Mountain House Road and onto the site. A new approximately 1,000-foot overhead line would connect from the switchyard to the new permanent Bethany Reservoir Pumping Plant substation, which would span approximately 3.7 acres. New temporary overhead power lines would also be installed from the switchyard to the Bethany Reservoir Pumping Plant and the Surge Basin contractor's yards. An additional temporary connection to the existing 14 kV overhead distribution line on Mountain House Road, a new metering area, and approximately 1,000 feet of new overhead power would be installed to power emergency responders' area southeast of the intersection of Mountain House and Kelso Roads. These electrical facilities would be removed after completion of construction, and the alignments would be contained within the site disturbance boundary and would be removed after construction.

As noted in Section 6, the 230-kV main distribution substation at the Bethany Reservoir Pumping Plant would contain two SF_6 circuit breakers, and the new switchyard near the Tracy Substation would include four SF_6 circuit breakers.

An additional power connection for the aqueducts work would be required at the controlled low-strength material (CLSM) Processing Area and for the mined tunnel portal area, located off Kelso Road, west of the Tracy Substation. Rather than connecting to the Bethany Complex onsite substation, this site would connect to an existing overhead line along Kelso Road, across the street from the site entrance. A 25-foot-by-25-foot metering area would be installed on the southern side of Kelso Road, and from there, new overhead line would be installed along the site access road, for a total distance of approximately 1,200 linear feet, all of which would be contained within the site disturbance area and roadway improvements.

7.13 Bethany Reservoir Discharge Structure

New low-voltage power supply would be required at the Discharge Structure on Bethany Reservoir. A new line would be dropped from PG&E's existing 69-kV overhead power line along Christensen Road. A 25-foot-by-25-foot metering area would be installed adjacent to the existing tower, and, from there, new overhead power would be installed along the existing access road, around the parking lot, and adjacent to the California Aqueduct Bikeway along the perimeter of Bethany Reservoir until reaching the site. In total, this alignment spans approximately 1.1 mile; including the metering area and the 25-foot corridor, this would permanently impact approximately 3.4 acres. Attachment 1 shows this alignment.

7.14 Hood-Franklin Park-and-Ride Lot

The Hood-Franklin Park-and-Ride Lot, located on the southeast quadrant of the Hood-Franklin Road on/off-ramp along I-5, would require a new line to power lights and electric vehicle charging stations. It is assumed that approximately 300 linear feet of new underground conduit would need to be trenched into the proposed access road to reach an existing SMUD overhead line along Hood-Franklin Road, as presented in Attachment 1. The work would be contained within the site disturbance boundary for other Project facilities. It is assumed power to this site and all other park-and-ride lots would be abandoned in-place following completion of Project construction. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be contained onsite.

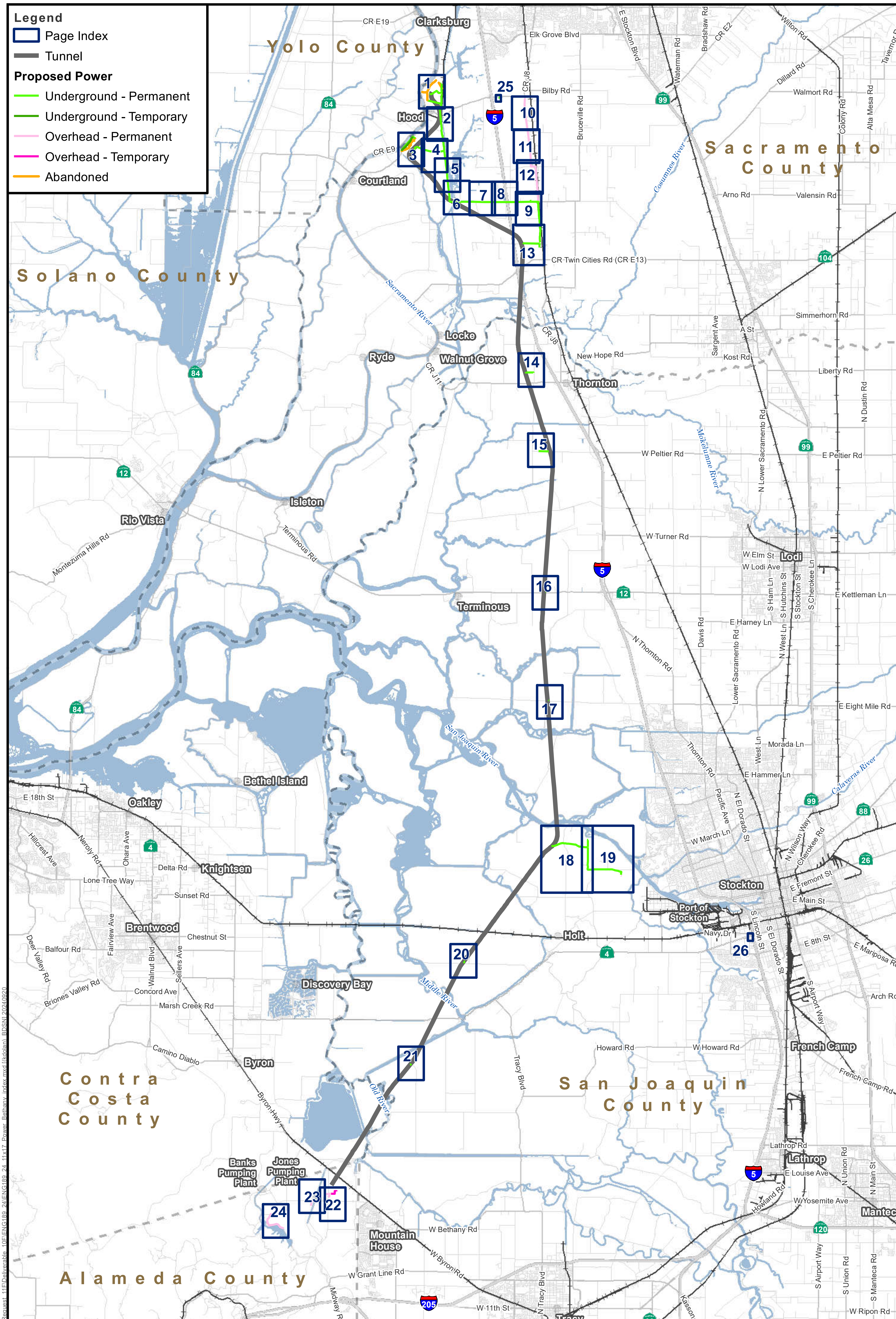
7.15 Charter Way Park-and-Ride Lot

An existing 11-kV PG&E line is located on the site located on the southeast quadrant of the intersection of SR 4 and Stockton Boulevard. It is assumed power would be dropped directly from this line which terminates at the site and no changes to existing infrastructure off-site would be required. This alignment is presented in Attachment 1. It is assumed this power line would be abandoned in-place following completion of Project construction. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be contained onsite.

8. References

California Department of Water Resources (DWR). 2023. *Delta Conveyance Project Final Environmental Impact Report*. SCH# 2020010227. December.

Attachment 1
Delta Conveyance Project Power Supply



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DCA Delta Conveyance Design & Construction Authority

N

0 3.25 Miles

Key Map
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR

- Page Index
- Connection to Existing Overhead
- Proposed Substation
- Abandoned Existing Power

Proposed Underground Power

- Within Proposed Roadway
- Outside Roadway
- Relocated Non-Project Power

Existing Power

PG&E Low Voltage

- 21-22 kV

SMUD Low Voltage

- 12 kV

- Tunnel

- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

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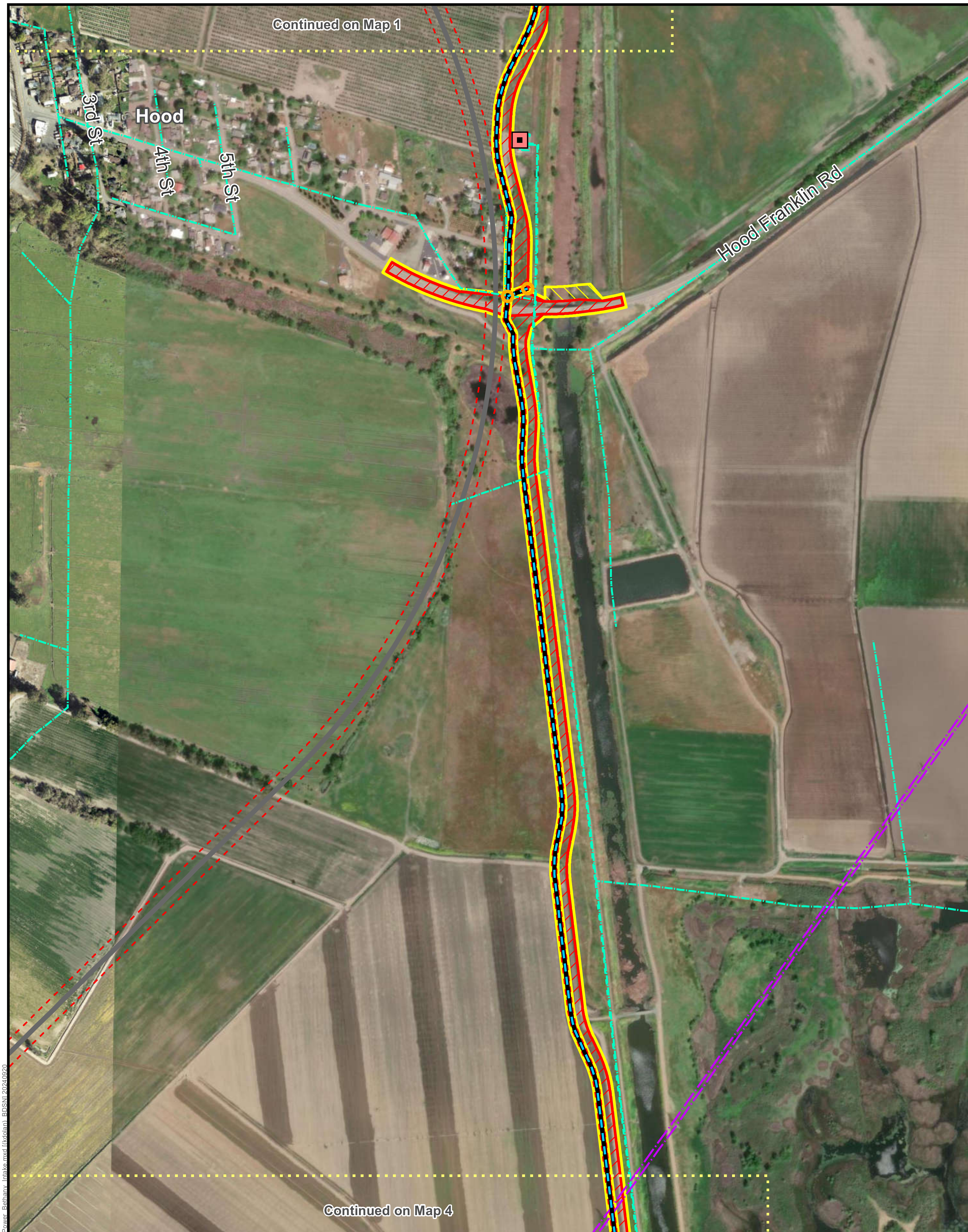
Sheet 1 of 26
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR



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Existing Substation
Connection to Existing Overhead

Proposed Underground Power
Outside Roadway

Existing Power
PG&E High Voltage
115 kV
SMUD Low Voltage
12 kV
SMUD High Voltage
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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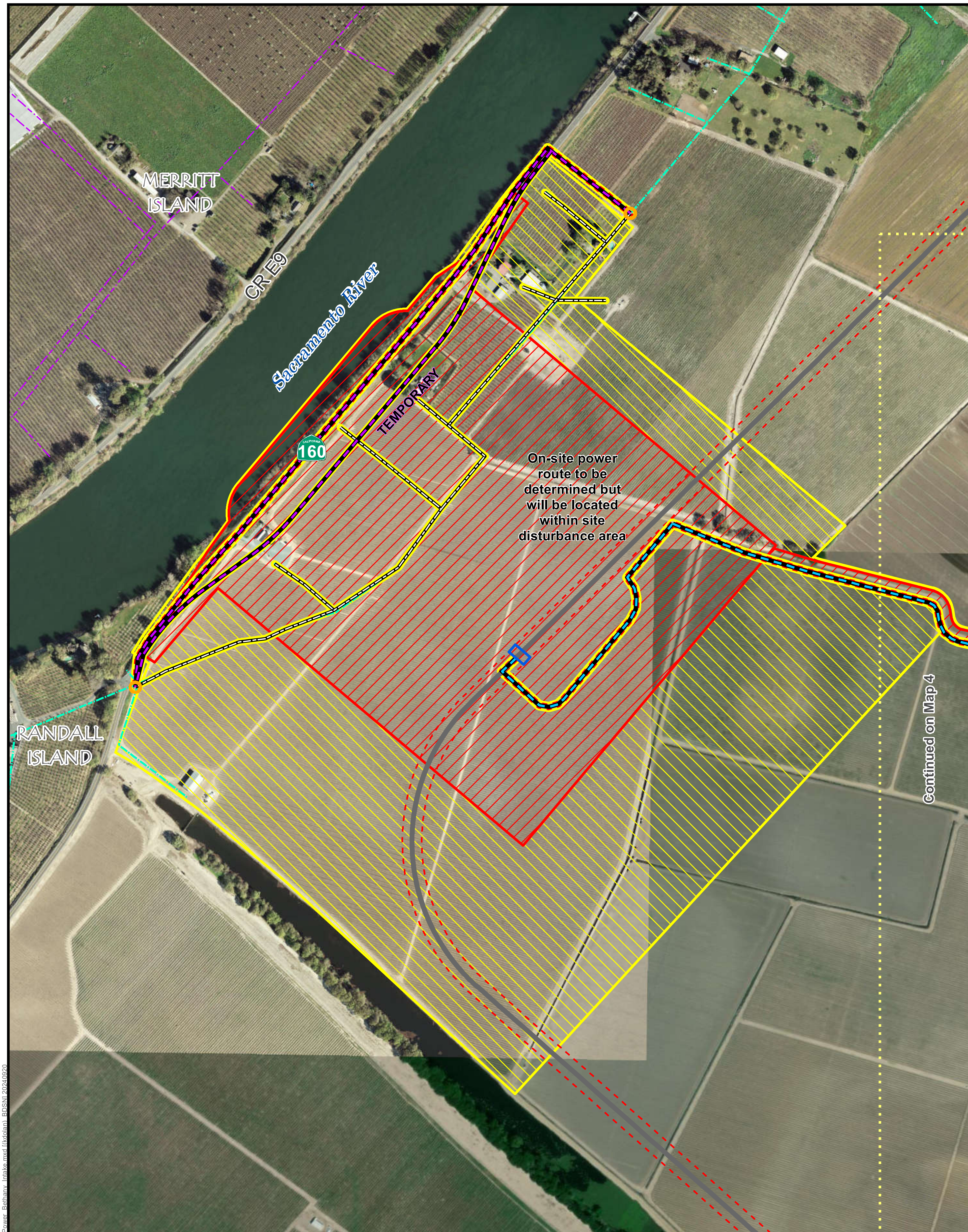
Sheet 2 of 26
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR



Continued on Map 4

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Connection to Existing Overhead
Proposed Substation
Abandoned Existing Power

Proposed Underground Power
Outside Roadway
Relocated Non-Project Power

Existing Power

PG&E Low Voltage
21-22 kV

PG&E High Voltage
115 kV

SMUD Low Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Sheet 3 of 26
Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

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Proposed Switching Station
Proposed Underground Power
Within Proposed Roadway
Outside Roadway

Existing Power
PG&E High Voltage
115 kV
SMUD Low Voltage
12 kV
SMUD High Voltage
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Sheet 4 of 26
Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

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Proposed Underground Power
Outside Roadway

Existing Power
SMUD Low Voltage
12 kV
SMUD High Voltage
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

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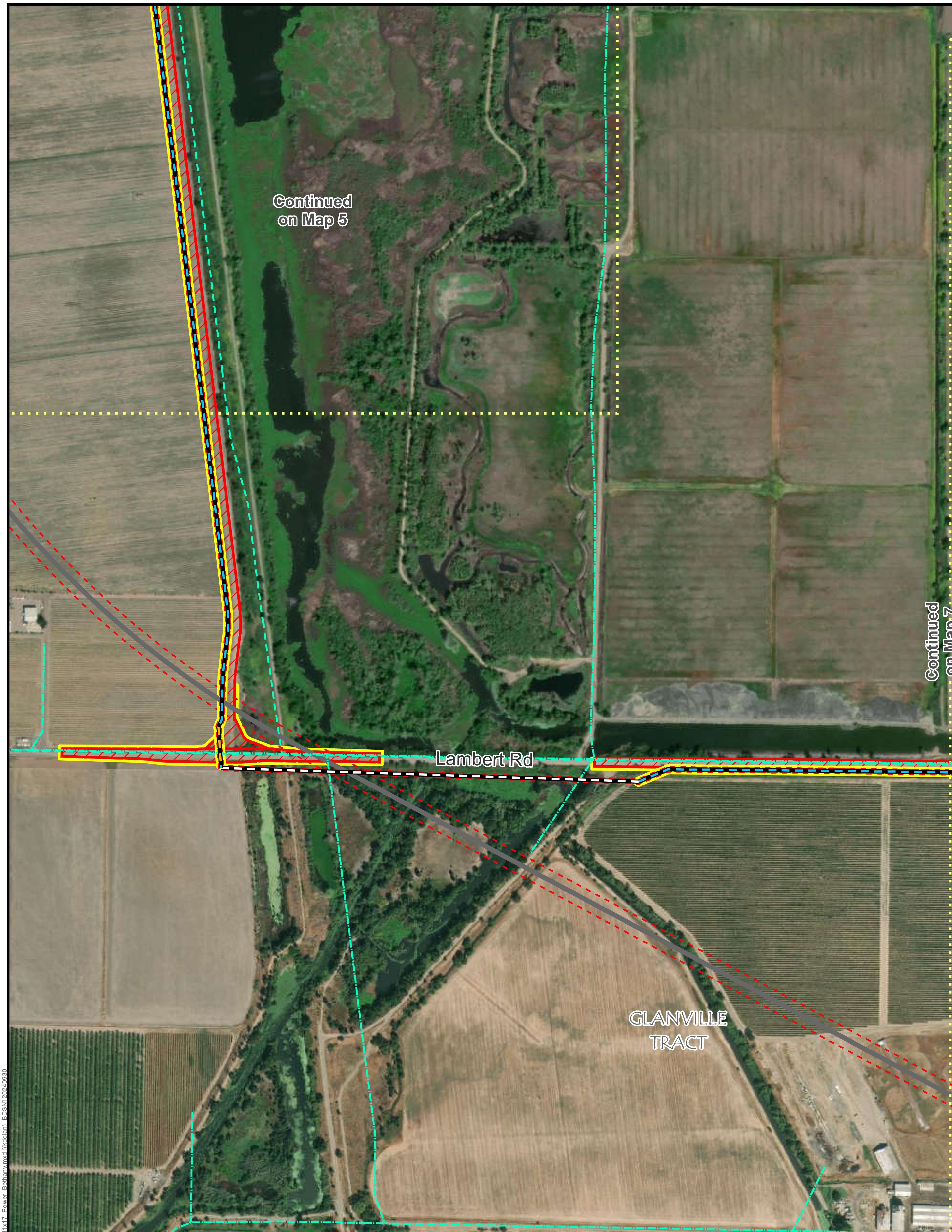

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Proposed Underground Power

Within Proposed Roadway

Outside Roadway

Trenchless Installation

Existing Power

SMUD Low Voltage

12 kV

SMUD High Voltage

60-70 kV

Tunnel

Permanent Subsurface Impact

Permanent Surface Impact

Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

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Proposed Underground Power

Outside Roadway

Existing Power

SMUD Low Voltage

12 kV

SMUD High Voltage

60-70 kV

Tunnel

Permanent Subsurface Impact

Permanent Surface Impact

Temporary Surface Impact

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Sheet 7 of 26
Delta Conveyance Project Power Supply
September 2024

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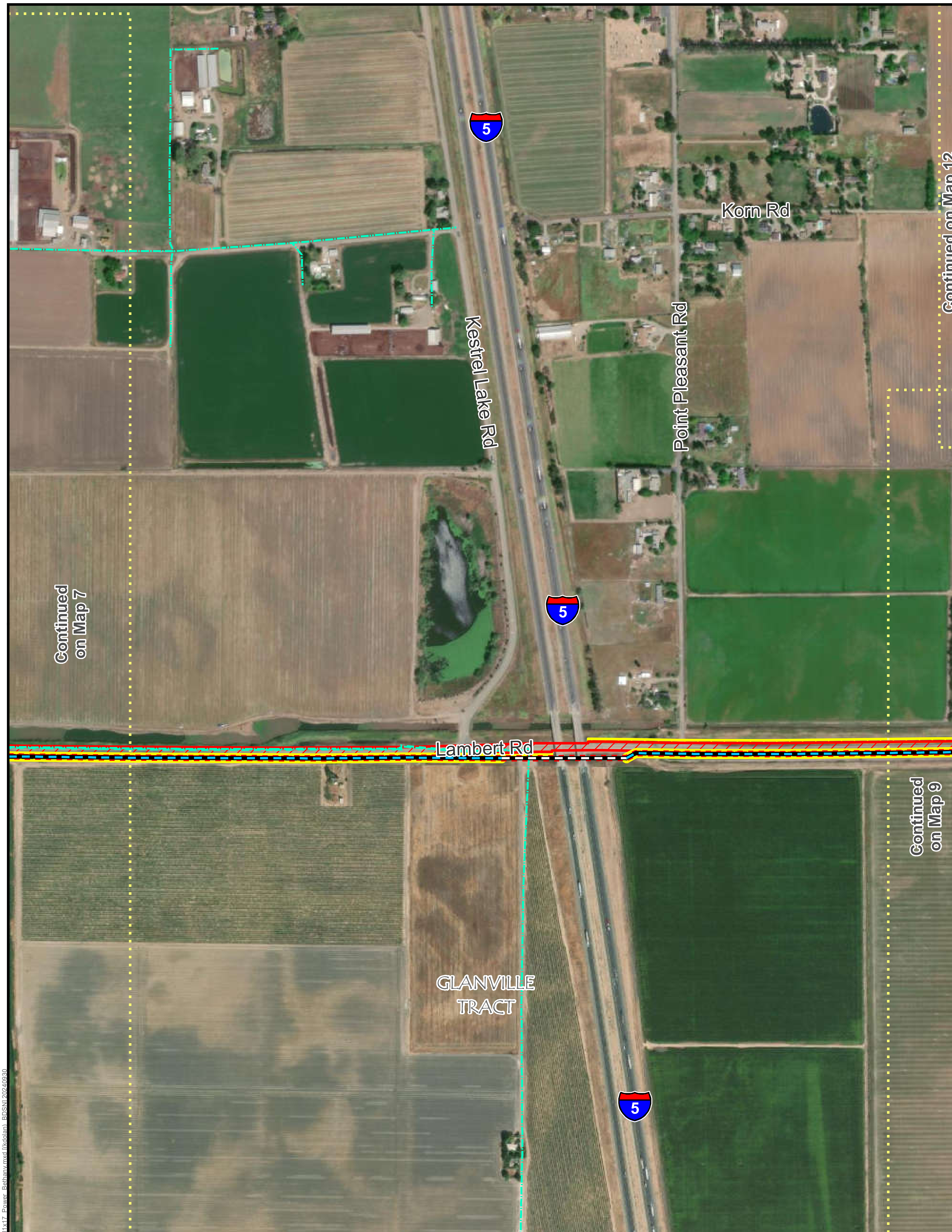

Continued on Map 12
Continued on Map 7
Continued on Map 9

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Proposed Underground Power
Outside Roadway
Trenchless Installation

Existing Power
SMUD Low Voltage
12 kV
SMUD High Voltage
60-70 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
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Data Source: DCA, DWR

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Existing Substation
Connection to Proposed Overhead, Existing Pole
Proposed Switching Station

Proposed Underground Power
Within Existing Roadway
Within Proposed Roadway
Outside Roadway

Proposed Overhead Power
New Line on Existing Poles

Existing Power
SMUD High Voltage
60-70 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR

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Page Index
Improvements to Existing Substation
Proposed Overhead Power
New Line on Existing Poles

Existing Power
SMUD High Voltage
60-70 kV
230KV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

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Proposed Overhead Power
New Line on Existing Poles

Existing Power
SMUD High Voltage
60-70 kV
230KV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR

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Proposed Overhead Power
New Line on Existing Poles

Existing Power
SMUD High Voltage
60-70 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

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Proposed Substation
Proposed Underground Power
Within Existing Roadway
Within Proposed Roadway
Outside Roadway

Existing Power
SMUD High Voltage
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Sheet 13 of 26
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR

Connection to Existing Overhead
Proposed Metering Area
Metering Area
Proposed Underground Power
Within Proposed Roadway

Existing Power
PG&E Low Voltage
11 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Sheet 14 of 26
Delta Conveyance Project Power Supply
September 2024

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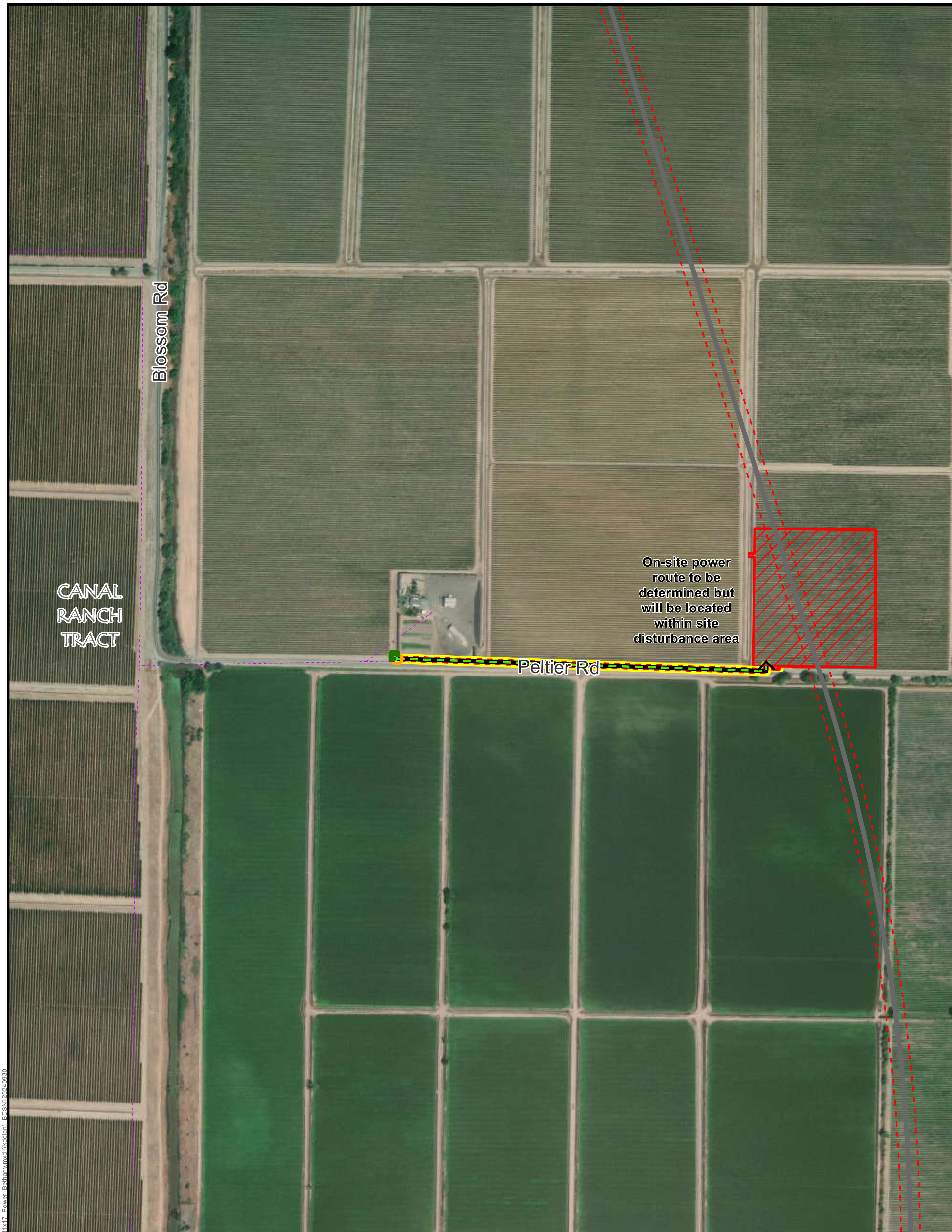

Connection to Existing Overhead
Proposed Metering Area
Metering Area
Proposed Underground Power
Within Existing Roadway

Existing Power
PG&E Low Voltage
11 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Sheet 15 of 26
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR

Connection to Existing Overhead
Proposed Metering Area
Metering Area
Proposed Underground Power
Within Proposed Roadway
PG&E Low Voltage
11 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

Connection to Existing Overhead
Proposed Metering Area
Metering Area
Proposed Underground Power
Within Proposed Roadway
Tunnel
Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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This mapbook is a scaled representation of the GIS data and only shows major facilities.

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N
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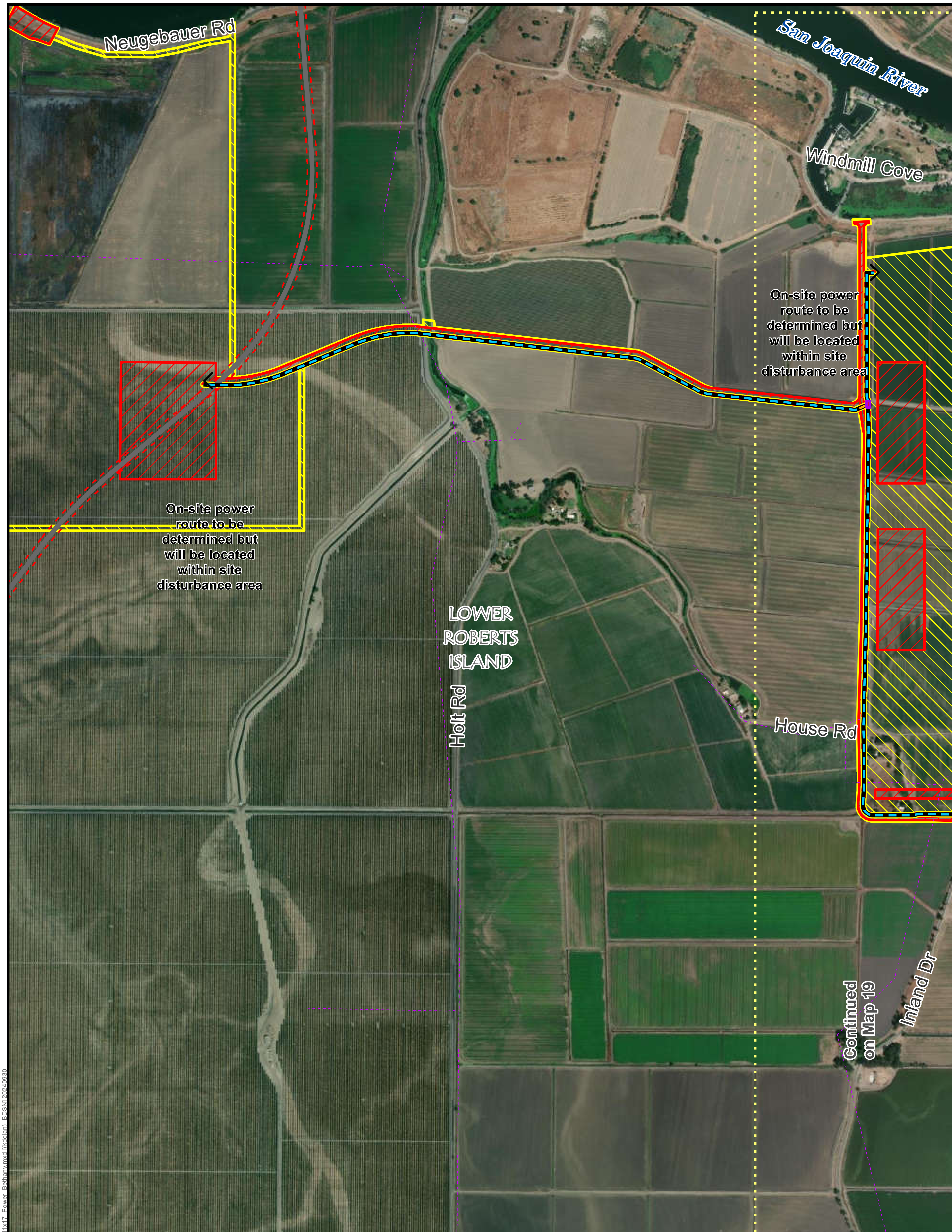
Sheet 17 of 26
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR



Page Index
Proposed Switching Station
Proposed Underground Power
Within Proposed Roadway
Outside Roadway

Existing Power
PG&E Low Voltage
11 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 1,000 Feet

Sheet 18 of 26
Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

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Connection to Existing Overhead
Proposed Substation
Proposed Switching Station
Proposed Underground Power
Within Proposed Roadway
Outside Roadway
Proposed Overhead Power
New Line and Poles
PG&E Low Voltage
11 kV
PG&E High Voltage
230 kV
WAPA
230 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

Draft example mapbook for discussion purposes only. This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA
DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 1,000
Feet

Sheet 19 of 26
Delta Conveyance Project Power Supply
September 2024

Data Source: DCA, DWR

Connection to Existing Overhead
Metering Area
Proposed Underground Power
Underground New, New Line and Poles
PG&E Low Voltage
11 kV
Tunnel
Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

Draft example mapbook for discussion purposes only. This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

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Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

Connection to Existing Overhead
Metering Area
Proposed Underground Power
Within Proposed Roadway
PG&E Low Voltage
11 kV
Tunnel
Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

Draft example mapbook for discussion purposes only. This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Sheet 21 of 26
Delta Conveyance Project Power Supply
September 2024

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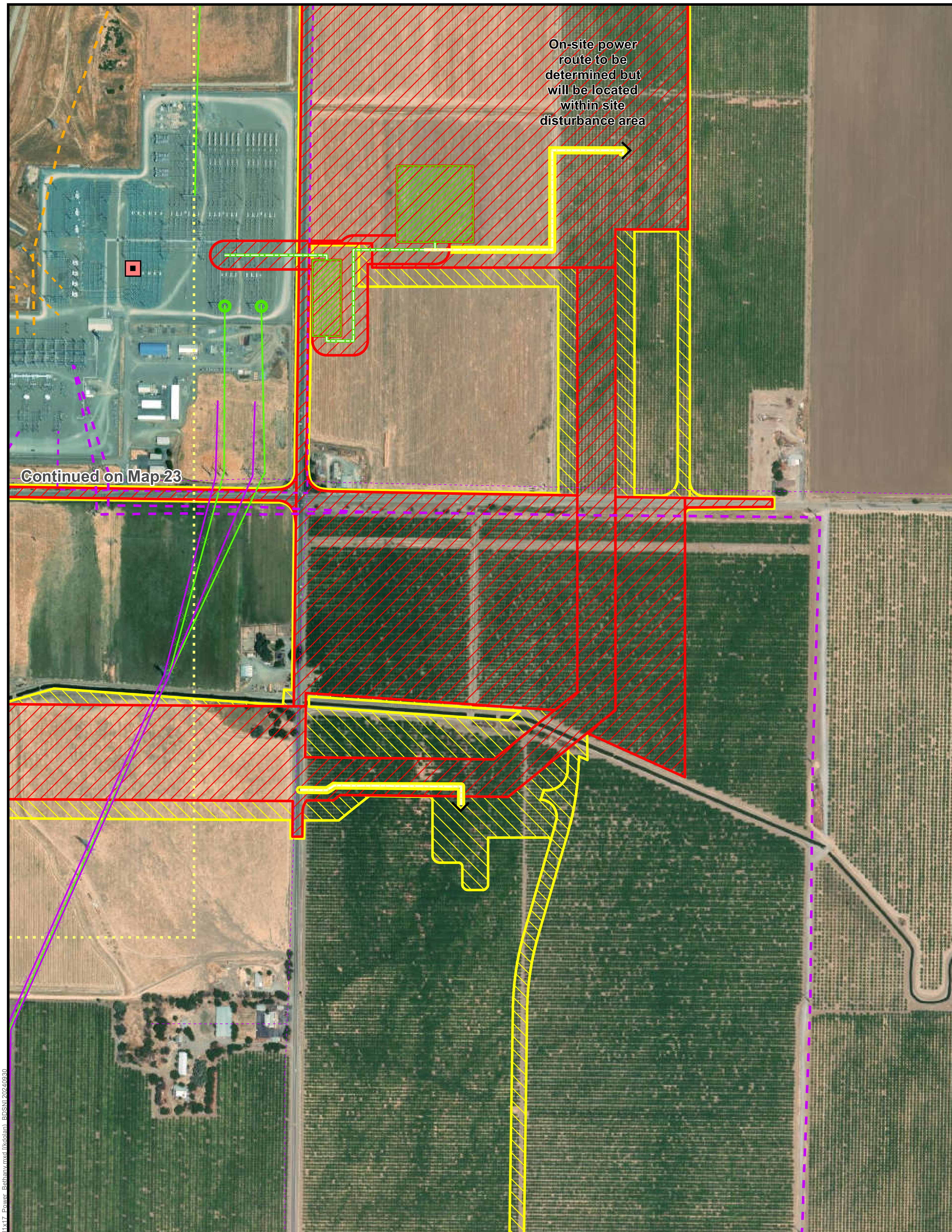

- Page Index
- Existing Substation
- Connection to Existing Substation
- Substation

Proposed Overhead Power
- New Line and Poles
- New Line and Towers

Existing Power

PG&E Low Voltage
- 11 kV

PG&E High Voltage
- 60-70 kV
- 500 kV

PGE High Voltage
- 230 kV

WAPA
- 60-70 kV
- 230 kV

Other
- TANC 500 kV

- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

Draft example mapbook for discussion purposes only. This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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0 500 Feet

Sheet 22 of 26
Delta Conveyance Project Power Supply
September 2024

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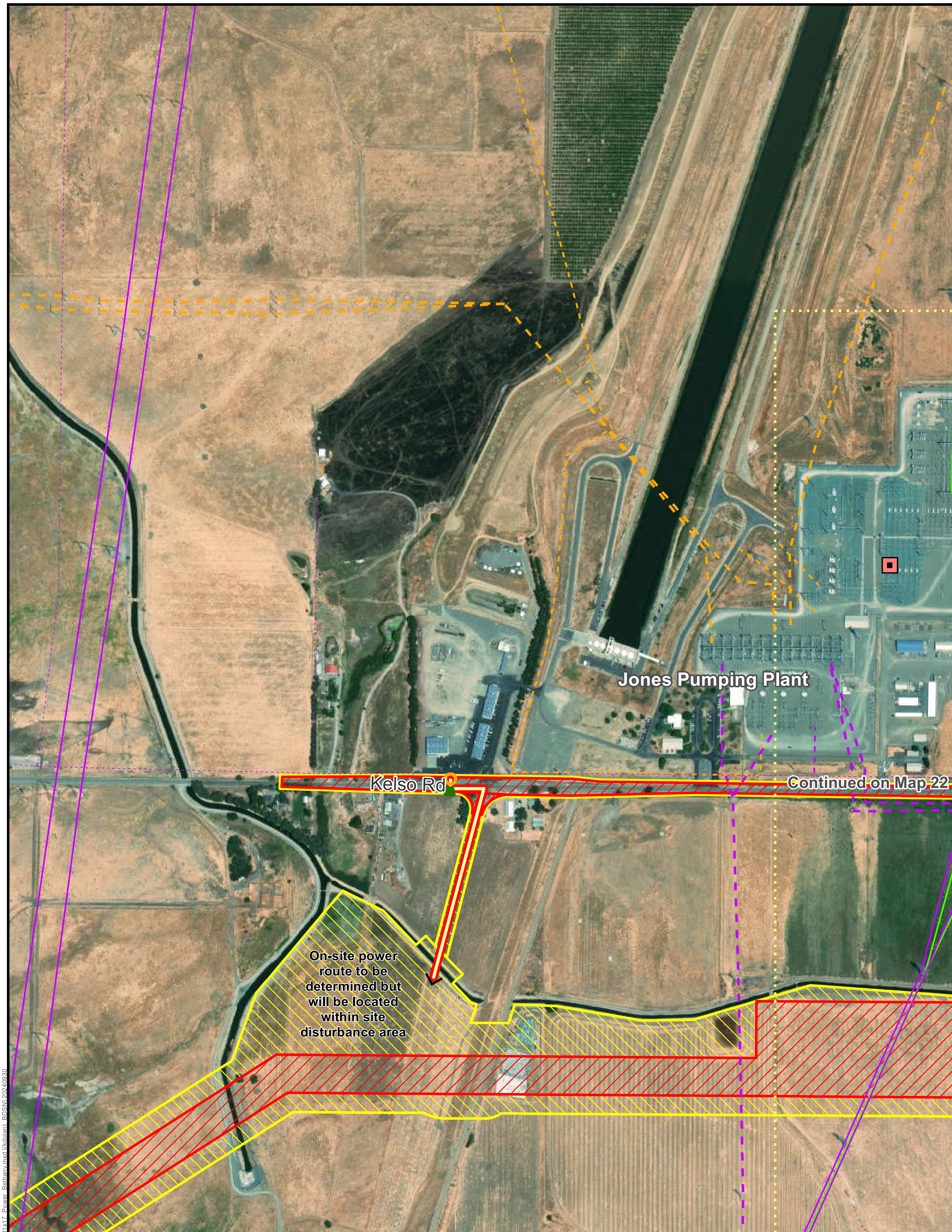
Data Source: DCA, DWR



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Existing Substation
Connection to Existing Overhead
Metering Area
Proposed Overhead Power
New Line and Poles
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
500 kV
PGE High Voltage
230 kV
WAPA
60-70 kV
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

Draft example mapbook for discussion purposes only.
This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

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Delta Conveyance Project Power Supply
September 2024

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Data Source: DCA, DWR

Connection to Existing Overhead
Metering Area
Proposed Overhead Power
New Line and Towers
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
PGE High Voltage
230 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

Draft example mapbook for discussion purposes only. This mapbook is a scaled representation of the GIS data and only shows major facilities.

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N

0 500 Feet

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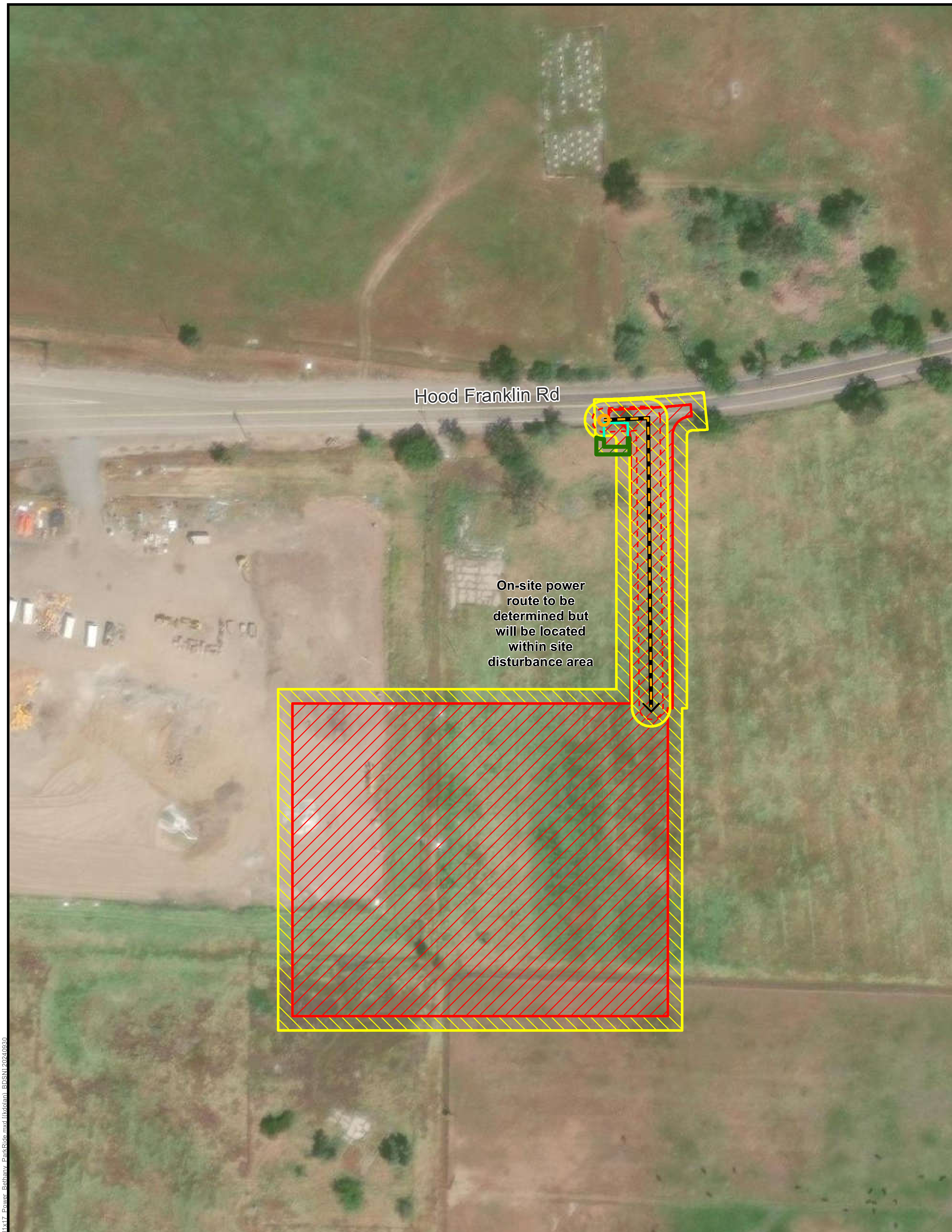
Data Source: DCA, DWR



Connection to Existing Overhead
Proposed Metering Area
Metering Area
Proposed Underground Power
Within Proposed Roadway

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 100 Feet

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Delta Conveyance Project Power Supply
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Data Source: DCA, DWR

- Connection to Existing Overhead
- Proposed Metering Area

Proposed Overhead Power
- New Line and Poles

Existing Power

PG&E Low Voltage
- 11 kV

PG&E High Voltage
- 60-70 kV
- 115 kV

- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

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N

0 100 Feet

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Delta Conveyance Project Power Supply
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Data Source: DCA, DWR