Subject:	**Electrical Power Load and Routing Study (Final Draft)**
Project feature:	Site Development / Logistics
Prepared for:	California Department of Water Resources (DWR) / Delta Conveyance Office (DCO)
Prepared by:	Delta Conveyance Design and Construction Authority (DCA)
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1. Introduction

The DWR issued a Notice of Preparation (NOP) pursuant to the California Environmental Quality Act (CEQA) on January 15, 2020 (DWR 2020a). The NOP identified a proposed Delta Conveyance Project (Project) to include new intake facilities located along the Sacramento River between Freeport and the confluence of the Sacramento River with Sutter Slough. The new Project conveyance facilities would also include a tunnel to convey water from the new intakes to the existing State Water Project (SWP) Harvey O. Banks (Banks) Pumping Plant and related pumping and conveyance facilities in the south Delta.

The NOP described Central and Eastern corridor options to convey water from intakes in the north Delta to the SWP and potentially the Central Valley Project (CVP) pumping plants in the south Delta. Each corridor would use the same intakes and the same Southern Forebay, Pumping Plant, and South Delta Conveyance Facilities, and Project alternatives would be sized to convey a range of project design flow rates from 3,000 cfs to 7,500 cfs.

The NOP was circulated to the public, interest groups, and agencies to receive comments. The comments were summarized in a Scoping Report released by DWR in July 2020 (DWR 2020b). Some of the comments were related to concerns about the construction of facilities near roadways and communities near the Clifton Court Forebay. DWR considered the scoping comments and methods to reduce environmental disturbances at the proposed new Southern Forebay and identified the Bethany Alternative that would extend from the intakes along the Eastern Corridor to Lower Roberts Island; and then, continue along a tunnel alignment to a new Bethany Reservoir Pumping Plant to be located south of the Clifton Court Forebay. The new pumping plant and associated aqueducts would convey the water to a Bethany Reservoir Discharge Structure along the rim of the existing 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. 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.

Following this introduction, the TM includes the following sections:

- Conceptual Development Criteria
- Existing Electrical Supplies in the Project Area
- Estimated Power Loads
- Proposed Electrical Facilities
- Circuit Breakers
- Power Supply Alignments
- References
- Document History and Quality Assurance

The *Environmental Impact Report* (EIR) and subsequent documentation will describe existing conditions for these power networks and anticipated project benefits and impacts.

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 the case of some facilities located within the Southern Complex, 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 6.1 and 6.2.

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 Southern 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 Southern 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 Bouldin Island and Lower Roberts Island.
  - Helicopters may be used to install connections or extend high voltage transmission lines in, or around, the Southern 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. 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 Southern 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 2-1. 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.

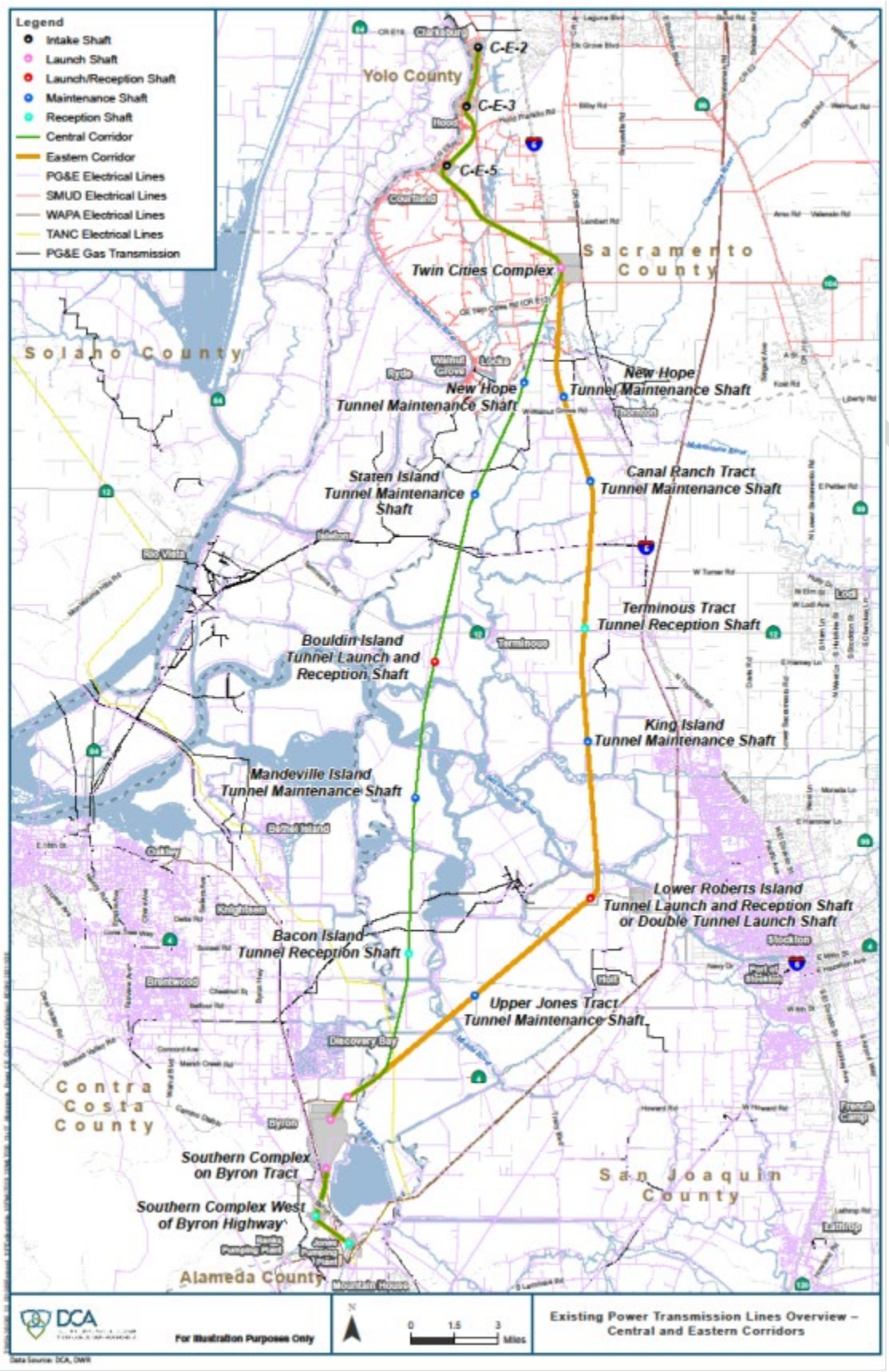


Figure 3-1. Existing Electrical Power Infrastructure in Project Area

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 less emissions.

Power demand during operations would include power for mechanical equipment (e.g., operable gates, screen cleaners, pumps), sensors and SCADA systems, and power for onsite buildings and lights. Operations loads would vary slightly depending on the type of fish screen installed at the intake(s) to protect aquatic species. The project will include either vertical flat plat screens or cylindrical tee screens.

The power demand assumptions for construction of the key feature facilities for the Central and Eastern Corridor options are summarized in Tables 4.1 and 4.2, respectively, and the power demand assumptions for operations are presented in Tables 4.3 and 4.4.

Table 4.1 Electrical Power Load Assumptions for Construction of Key Features – Central Corridor

Project Capacity Option (cfs)	**3,000**	**4,500**	**6,000**	**7,500**
Facility	**Load (kVA)**			
Intake C-E-2	-	-	-	6,000
Intake C-E-3	-	8,000	8,000	8,000
Intake C-E-5	8,000	6,000	8,000	8,000
Lambert Batch Plants	8,000	8,000	8,000	8,000
Twin Cities Launch Shaft and Reusable Tunnel Material (RTM) Storage and Management[a]	39,000	39,000	61,000	61,000
Bouldin Launch and Reception Shaft	18,000	18,000	29,000	29,000
New Hope Tract Maintenance Shaft	1,000	1,000	1,000	1,000
Staten Island Maintenance Shaft	1,000	1,000	1,000	1,000
Bacon Island Reception Shaft[b]	5,000	5,000	5,000	5,000
Mandeville Island Maintenance Shaft	1,000	1,000	1,000	1,000
Southern Complex	60,100	60,100	71,100	91,100
South Delta Conveyance Facilities	2,000	2,000	2,000	4,000
Hood-Franklin Park & Ride	359	359	359	359
Rio Vista Park & Ride	357	357	357	357
Byron Park & Ride	356	356	356	356
Bethany Park & Ride	356	356	356	356
Charter Way Park & Ride	356	356	356	356
TOTAL (kVA)	**144,885**	**150,885**	**196,885**	**224,885**

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

[b] Includes power for a concrete batch plant to be located onsite during construction

Table 4.2 Electrical Power Load Assumptions for Construction of Key Features – Eastern Corridor

Project Capacity Option (cfs)	3,000	4,500	6,000	7,500
Facility	**Load (kVA)**			
Intake C-E-2	-	-	-	6,000
Intake C-E-3	-	8,000	8,000	8,000
Intake C-E-5	8,000	6,000	8,000	8,000
Lambert Batch Plants	8,000	8,000	8,000	8,000
Twin Cities Launch Shaft and RTM Storage and Management[a]	39,000	39,000	61,000	61,000
Lower Roberts Launch and Reception Shaft	18,000	18,000	29,000	29,000
New Hope Tract Maintenance Shaft	1,000	1,000	1,000	1,000
Canal Ranch Maintenance Shaft	1,000	1,000	1,000	1,000
Terminus Tract Reception Shaft	1,000	1,000	1,000	1,000
King Island Maintenance Shaft	1,000	1,000	1,000	1,000
Upper Jones Maintenance Shaft	1,000	1,000	1,000	1,000
Southern Complex	60,100	60,100	71,100	71,100
South Delta Conveyance Facilities	2,000	2,000	2,000	4,000
Hood-Franklin Park & Ride	359	359	359	359
Byron Park & Ride	356	356	356	356
Bethany Park & Ride	356	356	356	356
Charter Way Park & Ride	356	356	356	356
TOTAL (kVA)	**141,528**	**147,528**	**193,528**	**201,528**

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

Table 4.3 Electrical Power Load Assumptions for Operation of Key Features – Central Corridor

Intake Type	Tee Screen				Vertical Flat Plate			
Project Capacity Option (cfs)	**3,000**	**4,500**	**6,000**	**7,500**	**3,000**	**4,500**	**6,000**	**7,500**
Facility	**Load (kVA)**				**Load (kVA)**			
Intake C-E-2	-	-	-	3,500	-	-	-	2,500
Intake C-E-3	-	4,000	4,000	4,000	-	3,000	3,000	3,000
Intake C-E-5	4,000	3,500	4,000	4,000	3,000	2,500	3,000	3,000
Lambert Batch Plants	-	-	-	-	-	-	-	-
Twin Cities Launch Shaft and RTM Storage and Management	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Bouldin Launch and Reception Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
New Hope Tract Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Staten Island Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Bacon Island Reception Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Mandeville Island Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Southern Complex	91,000	101,000	122,000	132,000	91,000	101,000	122,000	132,000
South Delta Conveyance Facilities	2,000	2,000	2,000	3,000	2,000	2,000	2,000	3,000
Hood-Franklin Park & Ride	-	-	-	-	-	-	-	-
Rio Vista Park & Ride	-	-	-	-	-	-	-	-
Byron Park & Ride	-	-	-	-	-	-	-	-
Bethany Park & Ride	-	-	-	-	-	-	-	-
Charter Way Park & Ride	-	-	-	-	-	-	-	-
TOTAL (kVA)	**103,000**	**116,500**	**138,000**	**152,500**	**102,000**	**114,500**	**136,000**	**149,500**

[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.

Table 4.4 Electrical Power Load Assumptions for Operation of Key Features – Eastern Corridor

Intake Type	Tee Screen				Vertical Flat Plate			
Project Capacity Option (cfs)	**3,000**	**4,500**	**6,000**	**7,500**	**3,000**	**4,500**	**6,000**	**7,500**
Facility	**Load (kVA)**				**Load (kVA)**			
Intake C-E-2	-	-	-	3,500	-	-	-	2,500
Intake C-E-3	-	4,000	4,000	4,000	-	3,000	3,000	3,000
Intake C-E-5	4,000	3,500	4,000	4,000	3,000	2,500	3,000	3,000
Lambert Batch Plants	-	-	-	-	-	-	-	-
Twin Cities Launch Shaft and RTM	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Lower Roberts Launch and Reception Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
New Hope Tract Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Canal Ranch Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Terminus Tract Reception Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
King Island Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Upper Jones Maintenance Shaft	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]	1,000[a]
Southern Complex	91,000	101,000	122,000	132,000	91,000	101,000	122,000	132,000
South Delta Conveyance Facilities	2,000	2,000	2,000	3,000	2,000	2,000	2,000	3,000
Hood-Franklin Park & Ride	-	-	-	-	-	-	-	-
Byron Park & Ride	-	-	-	-	-	-	-	-
Bethany Park & Ride	-	-	-	-	-	-	-	-
Charter Way Park & Ride	-	-	-	-	-	-	-	-
TOTAL (kVA)	**104,000**	**117,500**	**139,000**	**153,500**	**103,000**	**115,500**	**137,000**	**150,500**

[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

Substations		Switching Stations		Metering Areas	
Type	**Footprint**	**Type**	**Footprint**	**Type**	**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	25 feet by 25 feet
		Triple downstream load circuits	90 feet by 70 feet		

Notes:

kV = kilovolt

The location of each of these types of facilities are presented in Tables 5-2 and 5-3 for the Central and Eastern Corridor options, respectively.

Table 5-2. Proposed Electrical Facilities – Central Corridor

Facility	Type and Description of Electrical Facility			
	Substation	**Switching Stations**	**Metering Area**	**Other**
Intake C-E-2 (7,500 cfs Option only)	69-kV onsite substation—Intake C-E-2	-	-	Onsite transformers, ≤69 kV, quantity TBD
Intake C-E-3	69-kV onsite substation—Intake C-E-3	Double downstream load circuits, low-profile switching station—intake haul road (7,500 cfs Option only, feeds Intakes C-E-2 and C-E-3)	-	Onsite transformers, ≤69 kV, quantity TBD

Table 5-2. Proposed Electrical Facilities – Central Corridor

Facility	Type and Description of Electrical Facility			
	Substation	Switching Stations	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 (not required for 3,000 cfs option, feeds Intake C-E-5 and line to Intakes C-E-2 and C-E-3)	-	Onsite transformers, ≤69 kV, quantity TBD
Lambert Road Batch Plants	-	Triple downstream load circuits, low-profile switching station (feeds batch plants, Twin Cities site, and intakes)	-	Onsite transformers, ≤69 kV, quantity TBD
				Improvements to existing utility substation
Twin Cities Dual Tunnel Launch Shaft	69-kV onsite main distribution substation	-	-	Onsite transformers, ≤69 kV, quantity TBD
	Two 69-kV onsite substations—tunnel launch shafts (north and south)	-	-	-
	Two 69-kV onsite substations—RTM storage and management (north and south)	-	-	-
New Hope Tract Tunnel Maintenance Shaft	-	-	Onsite	Onsite transformer
Staten Island Tunnel Maintenance Shaft	-	-	At connection to existing overhead	Onsite transformer
Bouldin Island Tunnel Launch and Reception Shaft	230-kV substation at I-5 and SR 12	-	-	Three SF_6 circuit breakers
	69-kV onsite substation—tunnel launch shaft	-	-	Onsite transformers, ≤69 kV
Mandeville Island Tunnel Maintenance Shaft	-	-	At connection to existing overhead	Onsite transformer

Table 5-2. Proposed Electrical Facilities – Central Corridor

Facility	Type and Description of Electrical Facility			
	Substation	Switching Stations	Metering Area	Other
Bacon Island Reception Shaft	-	-	At connection to existing overhead	Onsite transformer
Southern Forebay Inlet Structure Tunnel Launch Shaft, Byron Tract Working Shaft & South Delta Pumping Plant	-	230-kV switchyard adjacent to Tracy Substation		Three SF_6 circuit breakers at new switchyard adjacent to Tracy Substation
	230-kV onsite main substation		-	Two SF_6 circuit breakers at onsite main substation
	69-kV onsite substation—tunnel launch shaft (north)	-	-	Onsite transformers, ≤69 kV, quantity TBD
	69-kV onsite substation—dryers	-	-	-
Southern Forebay Outlet Structure and Launch Shaft	69-kV onsite substation—tunnel launch shaft (south)	-	-	Onsite transformers, ≤69 kV, quantity TBD
South Delta Outlet and Control Structure	-	-	Onsite	Onsite transformers, ≤69 kV, quantity TBD
DMC Control Structure (7,500 cfs Option only)	-	-	West of Mountain House Road	Onsite electrical building and transformers, ≤69 kV, quantity TBD
Hood-Franklin Park & Ride	-	-	Onsite	Onsite transformer
Rio Vista Park & Ride	-	-	Onsite	Onsite transformer
Byron Park & Ride	-	-	Onsite	Onsite transformer
Bethany Park & Ride	-	-	At connection to existing overhead	Onsite transformer
Charter Way Park & Ride	-	-	Onsite	Onsite transformer

Notes:
- = not applicable
≤ = less than or equal to
cfs = cubic feet per second
kV = kilovolt
TBD = to be determined

Table 5-3. Proposed Electrical Facilities – Eastern Corridor

Facility	Type and Description of Electrical Facility			
	Substation	Switchyard	Metering Area	Other
Intake C-E-2 (7,500 cfs Option only)	69-kV onsite substation—Intake C-E-2	-	-	Onsite transformers, ≤69 kV, quantity TBD
Intake C-E-3	69-kV onsite substation—Intake C-E-3	Double downstream load circuits, low-profile switching station—intake haul road (7,500 cfs Option only, feeds Intakes C-E-2 and C-E-3)	-	Onsite transformers, ≤69 kV, quantity TBD
Intake C-E-5	69-kV onsite substation—Intake C-E-5	Double downstream load circuits, low-profile switching station—intake haul road (not required for 3,000 cfs option, feeds Intake C-E-5 and line to Intakes C-E-2 and C-E-3)	-	Onsite transformers, ≤69 kV, quantity TBD
Lambert Road Batch Plants	-	Triple downstream load circuits, low-profile switching station (feeds batch plants, Twin Cities site, and intakes)	-	Onsite transformers, ≤69 kV, quantity TBD
Twin Cities Dual Tunnel Launch Shaft	69-kV onsite main distribution substation	-	-	Onsite transformers, ≤69 kV, quantity TBD
	Two 69-kV onsite substations—tunnel launch shafts (north and south)	-	-	-
	Two 69-kV onsite substations—RTM storage and management (north and south)	-	-	-
New Hope Tract Tunnel Maintenance Shaft	-	-	Onsite	Onsite transformer
Canal Ranch Tract Tunnel Maintenance Shaft	-	-	At connection to existing overhead	Onsite transformer
Terminous Tract Tunnel Reception Shaft	-	-	Onsite	Onsite transformer

Table 5-3. Proposed Electrical Facilities – Eastern Corridor

Facility	Type and Description of Electrical Facility			
	Substation	Switchyard	Metering Area	Other
King Island Tunnel Maintenance Shaft	-	-	At connection to existing overhead	Onsite transformer
Lower Roberts Island Tunnel Launch and Reception Shaft	230-kV substation—House Road	-	-	Three SF_6 circuit breakers
	69-kV onsite substation—tunnel launch shaft	-	-	Onsite transformers, ≤69 kV
Upper Jones Tract Tunnel Maintenance Shaft	-	-	At connection to existing overhead	Onsite transformer
Southern Forebay Inlet Structure Tunnel Launch Shaft, Byron Tract Working Shaft & South Delta Pumping Plant	-	230-kV switchyard adjacent to Tracy Substation		Three SF_6 circuit breakers at new switchyard adjacent to Tracy Substation
	230-kV onsite main substation		-	Two SF_6 circuit breakers at onsite main substation
	69-kV onsite substation—tunnel launch shaft (north)	-	-	Onsite transformers, ≤69 kV, quantity TBD
	69-kV onsite substation—dryers	-	-	-
Southern Forebay Outlet Structure and Launch Shaft	69-kV onsite substation—tunnel launch shaft (south)	-	-	Onsite transformers, ≤69 kV, quantity TBD
South Delta Outlet and Control Structure	-	-	Onsite	Onsite transformers, ≤69 kV, quantity TBD
DMC Control Structure (7,500 cfs Option only)	-	-	West of Mountain House Road	Onsite electrical building and transformers, ≤69 kV, quantity TBD
Hood-Franklin Park & Ride	-	-	Onsite	Onsite transformer
Rio Vista Park & Ride	-	-	Onsite	Onsite transformer
Byron Park & Ride	-	-	Onsite	Onsite transformer
Bethany Park & Ride	-	-	At connection to existing overhead	Onsite transformer
Charter Way Park & Ride	-	-	Onsite	Onsite transformer

Notes:

Table 5-3. Proposed Electrical Facilities – Eastern Corridor

Facility	Type and Description of Electrical Facility			
	Substation	Switchyard	Metering Area	Other

- = not applicable
≤ = less than or equal to
cfs = cubic feet per second
kV = kilovolt
TBD = to be determined

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. It is assumed that for all power lines with a voltage capacity of 230 kV or greater, 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. 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.

The location and quantity of SF_6 circuit breakers required for construction and operation of the Project are presented in Tables 6-1 and 6-2 for the Central and Eastern Corridor options, respectively.

Table 6-1. SF_6 Circuit Breaker Locations and Quantities – Central Corridor

Facility	Circuit Breakers	
	Quantity	Location
Bouldin Island Tunnel Launch and Reception Shaft	3	230-kV substation—I-5 and SR 12
Southern Forebay Inlet Structure Tunnel Launch Shaft, Byron Tract Working Shaft, and South Delta Pumping Plant	2	230-kV onsite main distribution substation
New 230-kV switchyard	3	Adjacent to Tracy Substation
TOTAL	**8**	

Notes:

Breakers will contain 70-90 pounds of gas each; will vary by manufacturer and voltage class

All SF_6 breakers will incorporate leak detection

Leakage rates will be less than 0.5%

Additional vacuum circuit breakers will be required for facilities, but these are not SF_6 and will contain no GHG

Table 6-2. SF_6 Circuit Breaker Locations and Quantities – Eastern Corridor

Facility	Circuit Breakers	
	Quantity	Location
Lower Roberts Island Launch and Reception Shaft	3	230-kV substation—House Road
Southern Forebay Inlet Structure Tunnel Launch Shaft, Byron Tract Working Shaft, and South Delta Pumping Plant	2	230-kV onsite main distribution substation
New 230-kV switchyard	3	Adjacent to Tracy Substation
TOTAL	**8**	

Notes:

Breakers will contain 70-90 pounds of gas each; will vary by manufacturer and voltage class

All SF_6 breakers will incorporate leak detection

Leakage rates will be less than 0.5%

Additional vacuum circuit breakers will be required for facilities, but these are not SF_6 and will contain no GHG

7. Power Supply Alignments

7.1 Central Corridor Options

This section describes the power alignments for the key features possible under all Project options along the Central Corridor.

7.1.1 Intake C-E-2

There are several existing overhead 12-kV power lines owned by SMUD located within the Intake C-E-2 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.

Approximately 2.1 miles of new 69-kV power would be installed underground within the C-E-2 site access route and intake haul road, traveling south to a double-circuit, low-profile switching station on the southwest quadrant of the intersection of the haul road and the site access road to Intake C-E-3. Power to the switching station is described under Sections 7.1.2 and 7.1.3. The onsite substation would include one SF_6 circuit breaker, as noted in Section 6, and the alignment would be contained within areas that would be disturbed by other facilities, as shown in Appendix A.

Approximately 1.3 mile of existing overhead power at C-E-2 would be abandoned. To provide power to the adjacent residences and agricultural facilities currently powered by these power lines, 0.9 mile of new underground power would be installed within the new haul road, connecting to the existing overhead lines that would be disrupted. All of these impacts would be contained within the site disturbance boundary.

Between Intake C-E-2 and C-E-3, several 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 three 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 0.15 acre which would be restored to existing conditions following installation.

7.1.2 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 along the same alignment as for Intake C-E-2, as discussed in Section 7.1.1 and presented in Appendix A.

Similar to Intake C-E-2, 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, and under the 7,500 cfs Option only, the site would also require the installation of a new switching station at the junction of the intake haul road, as described in Section 7.1.1. The onsite substation would require one SF_6 circuit breaker and under the 7,500 cfs option, the switching station at the haul road would require two additional SF_6 circuit breakers.

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.

Similar to Intake C-E-2, 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 Appendix A. 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.

7.1.3 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, as described in Section 7.1.2, 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 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 Appendix A.

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, required for all options except the 3,000 cfs option, would require two additional SF_6 circuit breakers.

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.

7.1.4 Lambert Road Temporary 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 Appendix A. 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.

7.1.5 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

Capacity (cfs)	3,000 and 4,500	6,000 and 7,500
Equipment Description	**Load (kVA)**	**Load (kVA)**
TBM and Trailing Gear Earth Pressure Balance (EPB)[a]	20,000	40,000
Tunnel Ventilation Fans	7,400	7,400
Water Cooling Plant	500	500
Foam Plant	500	500
Conveyor (Tunnel)	3,720	4,960
Conveyor (Surface)	340	460
Tunnel Lighting	350	350
Shaft Pumps	200	200
Compressed Air Plant	1,600	1,600
Main Hoist and Shaft Elevator	70	70
Shaft Gantry Crane	400	400
Shop Facilities	300	300
RTM Dryers	2,660	3,420
Water Treatment	200	200

Table 7-1. Preliminary Estimate of Power Required for Twin Cities Dual Launch Shaft Site

Capacity (cfs)	3,000 and 4,500	6,000 and 7,500
Equipment Description	**Load (kVA)**	**Load (kVA)**
Change House	40	40
Office Trailers	140	140
Yard Lighting	80	80
Miscellaneous	500	500
Recommendation	**39,000**	**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 Appendix A. 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.

7.1.6 New Hope Tract Tunnel Maintenance Shaft

An existing overhead 11-kV line owned by PG&E is located along West Lauffer Road adjacent to the New Hope Tract tunnel maintenance shaft location.

It is assumed that the existing power lines would provide adequate capacity for the construction and operational loads at the tunnel shaft. To provide power to the site, a new line would be dropped from the existing line installed underground via open-cut trench and maintained underground onsite. The metering area for this site would be onsite, as noted in Section 5. This is presented in Appendix A.

7.1.7 Staten Island Tunnel Maintenance Shaft

An existing overhead 12-kV line owned by PG&E is located along Staten Island Road adjacent to the Staten Island tunnel maintenance shaft location.

It is assumed that the existing power lines would provide adequate capacity for the construction and operation loads at the tunnel shaft. Power from the existing lines would be connected to the site by dropping a new line from a pole adjacent to the site, running it through a new metering area near the pole, and open cut trenching the new line across Staten Island Road and into the site entrance route to provide onsite underground power. This would be contained within the site access site disturbance area with the exception of up to 50 square feet for staging and a 25-foot by 25-foot area for metering and installation of the new line connecting to the existing power pole, as presented in Appendix A.

7.1.8 Bouldin Island Tunnel Launch and Reception Shaft

Approximate power demands at the Bouldin Island launch and reception shaft site and all other launch shaft locations are summarized in Table 7.2.

Table 7-2. Preliminary Estimate of Power Required for Bouldin Island Launch Shaft Site

Capacity (cfs)	3,000 and 4,500	6,000 and 7,500
Equipment Description	**Load (kVA)**	**Load (kVA)**
TBM and Trailing Gear (EPB)	10,000	20,000
Tunnel Ventilation Fans	3,700	3,700
Water Cooling Plant	250	250
Foam Plant	250	250
Conveyor (Tunnel)	1,500	2,010
Conveyor (Surface)	150	200
Tunnel Lighting	150	175
Shaft Pumps	100	100
Compressed Air Plant	800	800
Main Hoist and Shaft Elevator	35	35

Table 7-2. Preliminary Estimate of Power Required for Bouldin Island Launch Shaft Site

Capacity (cfs)	3,000 and 4,500	6,000 and 7,500
Equipment Description	**Load (kVA)**	**Load (kVA)**
Shaft Gantry Crane	200	200
Shop Facilities	150	150
RTM Dryers	NA	NA
Water Treatment	100	100
Change House	20	20
Office Trailers	70	70
Yard Lighting	40	40
Miscellaneous	250	250
Recommendation	**18,000 kVA**	**29,000 kVA**

PG&E owns several low-voltage distribution lines located near the Bouldin Island Launch Shaft site and a substation along SR 12 on Guard Road. However, it is assumed that the existing distribution lines and substation could not provide adequate capacity for Project construction. WAPA owns two 230-kV transmission lines traversing generally north-south immediately west of I-5, approximately 7.4 miles east of the Bouldin Island Launch Shaft, and PG&E owns a 230-kV line running parallel to WAPA's lines, on the eastern side. It is assumed that the existing transmission lines could accommodate the Project power needs, which would require the installation of a new substation. 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. This substation could be connected to either WAPA's or PG&E's electrical grid.

To provide adequate power to the Bouldin Island construction sites, a new 69 kV line would be installed in a new dedicated easement primarily adjacent to SR 12. An underground ductbank would be installed from the launch site adjacent to the haul road north to SR 12, bypassing the Bouldin Island Interchange. The ductbank would proceed east about 3.75 miles in a new easement parallel to the highway to Little Potato Slough. The route would then veer south of the bridge over Little Potato Slough, extending approximately 0.3 miles along an existing dirt road and naturally-vegetated area. Approximately 900 linear feet of conduit would then be horizontal directionally drilled under Little Potato Slough south of SR 12; staging is expected to occur within the existing unpaved maintenance road on the west side of the Slough. Power would then be trenched across Tower Park Way and continue east along the southern ROW of the roadway until the junction with SR 12, then the conduit would continue approximately 4.5 miles east, south of the SR 12 ROW, until reaching the new substation. Assuming a 40-foot wide construction footprint along the entire alignment except under Little Potato Slough, this would result in a temporary impact of approximate 40 acres, plus an additional 7.5 acres for the substation, and 0.5 acre for staging for the HDD. The permanent footprint would include approximately 25 acres for the 25-foot dedicated easement along the alignment and 2 acres for the proposed 230-kV substation. This proposed power alignment is presented in Appendix A.

As noted in Section 5, the 230-kV substation as well as the onsite substation at the launch shaft would contain a combined total of three SF_6 circuit breakers.

7.1.9 Mandeville Island Tunnel Maintenance Shaft

An existing overhead 11-kV line owned by PG&E partially transects Mandeville Island from the West Mandeville Island Levee Road along the southern end of the island, northwest of Connection Slough on the interior of the island.

It is assumed that the existing power lines could provide adequate capacity for the construction and operation loads at the tunnel shaft. To accommodate the tunnel shaft site, underground cables would be installed within the proposed shaft access road, extending approximately 2 miles southeast. To connect to the existing overhead alignment, one additional new power pole would be installed where the access road intersects the overhead alignment, as presented in Appendix A. The new pole would be installed within the proposed access road ROW but staging may temporarily impact up to 50 SF that would be returned to existing conditions after installation. As noted in Section 5, this site would also include a 25-foot by 25-foot metering area at the connection to the existing overhead. This layout is presented in Appendix A.

7.1.10 Bacon Island Tunnel Reception Shaft

An existing overhead 11-kV line owned by PG&E is located near Bacon Island Road. It is assumed that this existing power line could provide adequate capacity for the construction and operation loads at the tunnel shaft. Similar to Mandeville Island, however, there is not existing power immediately adjacent to the shaft site. Therefore, power would be routed to the shaft site within the proposed access road. This would entail approximately 1.3 miles of trenching within the proposed roadway that would already be disturbed for site access. The new line would connect to existing overhead power on a pole west of South Bacon Island Road on the eastern side of the island, as presented in Appendix A. Staging for connection to the existing power pole may temporarily impact 50 square feet that would be returned to existing conditions after the connection is made. As noted in Section 5, this site would also include a 25-foot by 25-foot metering area at the connection to the existing overhead. This layout is presented in Appendix A.

7.1.11 Southern Forebay Inlet Structure and Tunnel Launch Shaft, Byron Tract Working Shaft, and South Delta Pumping Plant

There are several existing high-voltage overhead power lines located near the northern end of the Southern Forebay, including a 69-kV overhead line owned by WAPA located on and adjacent to Byron Tract and two 500-kV transmission lines owned by PG&E located along Byron Tract. Although both of these transmission lines extend along the edge of the proposed Southern Complex, due to the high load required, the site cannot connect to the existing overhead transmission lines like many other sites; rather, it must connect directly to a substation. PG&E has a major substation in Brentwood along Sellers Avenue, and WAPA's Tracy Substation is located south of Byron Highway near the intersection of Mountain House Road and Kelso Road, at the CVP Jones Pumping Plant. Although it is possible that PG&E could be the ultimate utility provider, less infrastructure is required to connect to the WAPA facilities, Therefore, it is assumed WAPA would be the provider. The Southern Complex would connect to WAPA's Tracy Substation as described below. Also, improvements to the substation, across Mountain House Road from the existing substation, would be required.

Due to the power supply voltage available from WAPA at the Tracy Substation, it is assumed that a new 230-kV line would be extended from the existing substation to a new 230-kV onsite, Southern Complex substation just north of the pumping plant, which will serve as the main distribution onsite, supplying additional onsite power needs. This alignment is discussed below and presented in Appendix A. As noted in Section 2, because this area is outside of the Greater Sandhill Crane roosting habitat, helicopters could be used to assist in the installation of the new line from t the existing substation to the new Southern Complex substation, if desired.

To connect with WAPA's Tracy Substation, approximately 8.3 miles of new overhead lines would need to be installed, as well as two sections of approximately 600 linear feet each where the route would be installed underground due to height restrictions at crossings of the existing overhead transmission lines. The route would extend from the Southern Complex substation, near the South Delta Pumping Plant, due east onto Victoria Island until it crosses the existing 500-kV Transmission Agency of Northern California (TANC) transmission line. At that point it would turn and parallel that line generally south across Coney Island, Union Island, and Clifton Court Tract until it crosses over Mountain House Road just south of the Byron Highway. It would then generally follow Mountain House Road until entering a new switchyard from the southern side near Kelso Road. The final connection would cross Mountain House Road and terminate at the existing Tracy substation. With new towers installed every 1,250 feet, this route is expected to require the installation of 36 new towers. Assuming a 150-foot dedicated easement, this would both temporarily and permanently impact approximately 150 acres. Additionally, it is assumed improvements to the Tracy Substation would be required to accommodate the new power loads. These improvements would temporarily impact approximately 7 acres of existing agricultural lands on the parcel east of the substation (onsite switchyard), across Mountain House Road, and permanently impact 4.3 acres.

All power for onsite facilities would be installed underground, joint-trenched into proposed onsite access roads. This includes power to the Byron Tract Working Shaft, the RTM drying area, and to the Southern Forebay Outlet Structure and Tunnel Launch Shaft, which are located approximately 2.1 miles northeast and 1.7 miles south of the proposed substation, respectively. Each of these sites would have an onsite substation. The footprint for the new power for these facilities would be entirely contained within the area which would be disturbed for the construction of the Southern Complex.

As noted in Section 5, the connection to the Tracy Substation, plus a total of three onsite substations would contain a total of three SF_6 circuit breakers.

7.1.12 South Delta Outlet and Control Structure and Tunnel Launch Shaft

An existing 21-kV overhead line owned by PG&E is located along North Bruns Road adjacent to the proposed site. It is assumed that the existing power lines could provide adequate capacity for the construction and operation loads at the tunnel shaft and structure site. Power would be connected to the existing overhead line approximately 0.5 miles south of Byron Highway, on North Bruns Way, distributed onsite and connected to the tunnel shaft and structure site via underground cables, all within the site disturbance boundary. As noted in Section 5, this site would also include a 25-foot by 25-foot metering area contained onsite, and the onsite substation would require one SF_6 circuit breaker. This alignment is presented in Appendix A.

7.1.13 Delta-Mendota Canal Control Structure

For the Project options designed to have a capacity of 7,500 cfs, there would be an additional control structure on the Delta-Mendota Canal (DMC) between the Byron Highway and the Jones Pumping Plant. This facility would require construction and operational power, assumed to be 480 v.

WAPA operates the Tracy Substation approximately 0.6 mile south of the DMC Control Structure, as well as 500-kV double-circuit transmission lines connecting to the substation, located less than 0.25 southwest of the facility. Additionally, TANC operates a 230-kV transmission line parallel to the WAPA lines, and PG&E operates a low-voltage distribution line down Mountain House Road.

For this site, due to the low-voltage required, power would be provided by a connection to the existing PG&E-owned line on Mountain House Road. A new overhead line would be installed overhead from an existing pole on the east side of the road to a 25-foot by 25-foot metering area on the west side of the roadway, and the new power supply would continue underground for approximately 650 feet to the new facility. This alignment is presented in Appendix A.

7.1.14 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 Appendix A. 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.

7.1.15 Rio Vista Park-and-Ride Lot

An existing 22-kV overhead line owned by PG&E is located adjacent to River Road west of the park-and-ride lot but provides power to an existing business at the intersection of SR 12 and River Road, which is immediately adjacent to the lot. Underground cables would be extended from this PG&E line to the park-and-ride lot, as presented in Appendix A. This would provide electrical service to the site for parking and electrical vehicle charging stations and would be contained within the site disturbance boundary required for the facility. As noted in Section 7.1.15, 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.

7.1.16 Byron Park-and-Ride Lot

The Byron Park-and-Ride Lot, located between Main Street and the Union Pacific Railroad line in the town of Byron, will receive power from an existing 21-kV overhead line owned by PG&E adjacent to the site. This would require trenching across Main Street, about 35 linear feet, resulting in a temporary disturbance of approximately 0.02 acre, as presented in Appendix A. Additionally, there are 8 power poles on the site that may need to be removed. It is assumed these poles and the power lines connecting them no longer actively provide power which would mean no relocation of power is required. If such relocation is required, it would be contained within the site disturbance area and the boundary of additional

disturbance within Main Street already described. As noted in Section 7.1.15, 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.

7.1.17 Bethany Park-and-Ride Lot

Trenching adjacent to and across West Bethany Road to an existing 11-kV overhead line and 60-kV overhead line owned by PG&E are located adjacent to the site would be required to provide new underground power to the Bethany Park-and-Ride Lot. The trenching, which would be located within an otherwise undisturbed area, would span approximately 125 linear feet, temporarily impacting an area of approximately 0.09 acre. This alignment is presented in Appendix A. As noted in Section 7.1.15, 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 located at the connection to the existing overhead.

7.1.18 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 Appendix A. As noted in Section 7.1.15, 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.

7.2 Eastern Corridor Options

This section describes the power alignments for the key features possible under all Project options along the Eastern Corridor.

7.2.1 Intakes C-E-2, C-E-3, and C-E-5

The power alignments for the intakes for the Eastern Corridor would be the same as described for the Central Corridor under Sections 7.1.1-7.1.3 and presented in Appendix B.

7.2.2 Twin Cities Tunnel Dual Launch Shaft Site

The power alignments for the Twin Cities site would be as described under Section 7.1.4 and presented in Appendix B.

7.2.3 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 Appendix B. 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.

7.2.4 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 Appendix B. 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.

7.2.5 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 Appendix B. As noted in Section 5, the 25-foot by 25-foot metering area for this site would be contained onsite.

7.2.6 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 Appendix B. 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.

7.2.7 Lower Roberts Island Tunnel Launch and Reception Shaft

There are two existing overhead lines owned by PG&E that transect the Lower Roberts Island 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 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 power transmission systems 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, 150 linear feet of new underground ductbank would be trenched into existing agricultural lands, temporarily disturbing approximately 0.01 acre that would otherwise be undisturbed by the Project. Then, approximately 2.4 miles of underground ductbank would be joint-trenched into the proposed roadway improvements along 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 tunnel launch site. This layout is presented in Appendix B. As noted in Section 5, the new 230-kV substation as well as the substation at the launch shaft would contain a combined total of three SF_6 circuit breakers.

7.2.8 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.

It is assumed the existing power line could provide adequate capacity for the construction and operation loads at the tunnel shaft. To provide power to the site, underground cables would be joint-trenched into the site access road, 0.5 mile south, to an existing power pole on West Bacon Island Road. The connection to the overhead line would require approximately 60 linear feet of trenching outside the site access road, into the northern ROW of West Bacon Island Road. Including 50 square feet for staging, this would temporarily impact approximately 0.04 acre that would not otherwise be disturbed. This would be restored to existing conditions following installation of the conduit. This alignment is presented in Appendix B. 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.

7.2.9 Southern Forebay Inlet Structure Tunnel Launch Shaft, Byron Tract Working Shaft, and South Delta Pumping Plant

The power alignments for the Southern Forebay Inlet Structure and Tunnel Launch Shaft, Byron Tract Working Shaft, and South Delta Pumping Plant for the Eastern Corridor would be the same as for the Central Corridor as described under Section 7.1.10 and presented in Appendix B.

7.2.10 Southern Forebay Outlet Structure and Tunnel Launch Shaft

The power alignments for the Southern Forebay Outlet Structure and Tunnel Launch Shaft on the Eastern Corridor would be the same as for the Central Corridor as described under Section 7.1.11 and presented in Appendix B.

7.2.11 South Delta Outlet and Control Structure

The power alignments for the South Delta Outlet and Control Structure for the Eastern Corridor would be the same as for the Central Corridor as described under Section 7.1.12 and presented in Appendix B.

7.2.12 Delta-Mendota Canal Control Structure

The power alignments for the DMC Control Structure for the Eastern Corridor would be the same as for the Central Corridor as described under Section 7.1.13 and presented in Appendix B.

7.2.13 Logistics Support Facilities

The power alignments for the park-and-ride facilities and temporary batch plants for the Eastern Corridor would be the same as for the Central Corridor as described under Sections 7.1.14-7.1.18 and presented in Appendix B, except that the Eastern Corridor would not include the Rio Vista Park-and-Ride Lot.

8. References

California Department of Water Resources (DWR). 2020a. *Notice of Preparation of the Environmental Impact Report for the Delta Conveyance Project*.

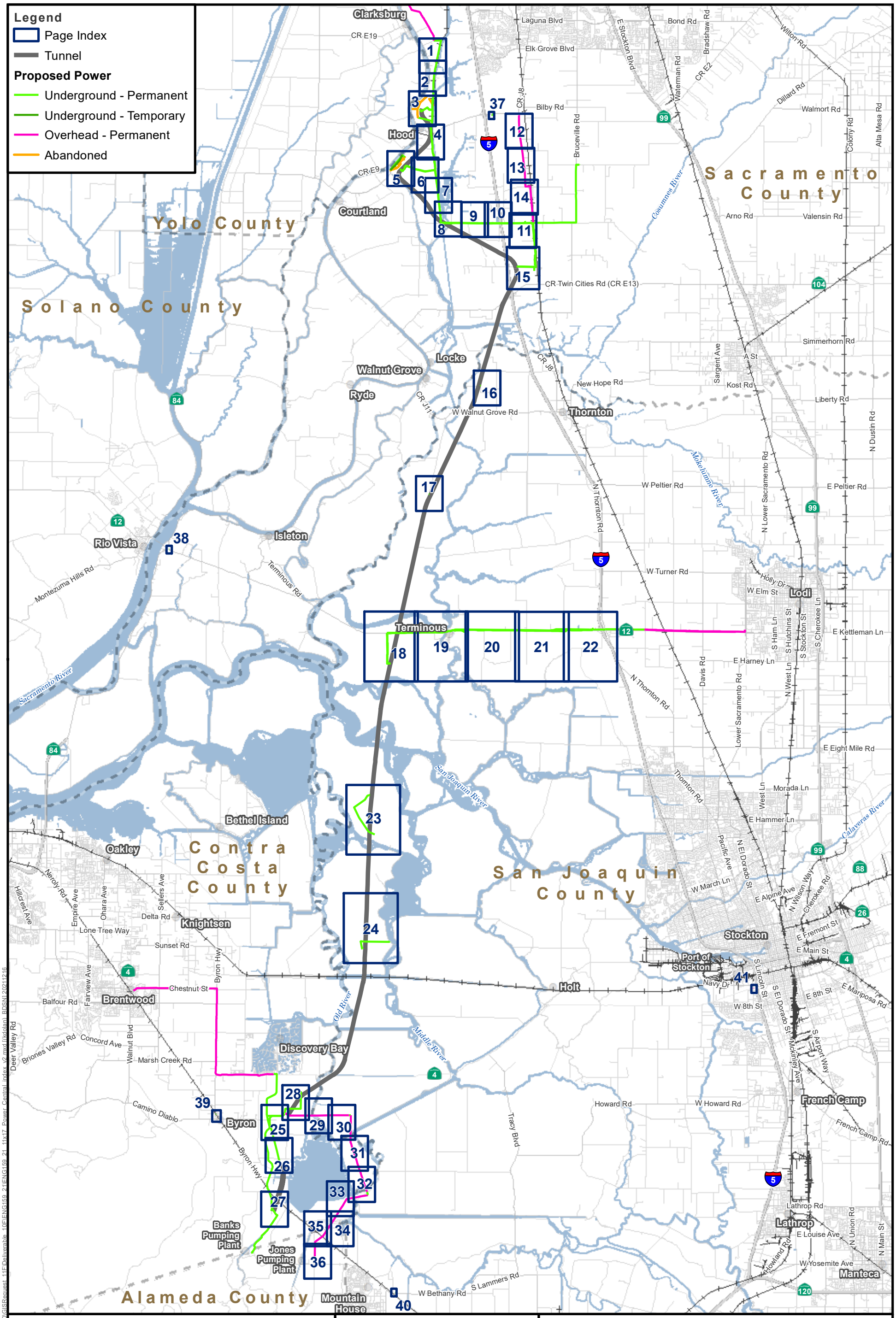
California Department of Water Resources (DWR). 2020b. *Delta Conveyance Project Scoping Summary Report*.

9. Document History and Quality Assurance

Reviewers listed have completed an internal quality review check and approval process for deliverable documents that is consistent with procedures and directives identified by the Engineering Design Manager (EDM) and the DCA.

Approval Names and Roles			
Prepared by	**Internal QC review by**	**Consistency review by**	**Approved for submission by**
Jacqueline Todak / EDM Deputy Project Manager	Phil Ryan / EDM Design Manager	Gwen Buchholz / DCA Environmental Consultant	Terry Krause / EDM Project Manager
This interim document is considered preliminary and was prepared under the responsible charge of Philip K. Ryan, California Professional Engineering License C41087.			

Appendix A
Central Corridor Power Supply


Legend
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Tunnel
Proposed Power
Underground - Permanent
Underground - Temporary
Overhead - Permanent
Abandoned
Clarksburg
CR E19
Laguna Blvd
Elk Grove Blvd
E Stockton Blvd
Bond Rd
Bradshaw Rd
Wilton Rd
CR E2
Waterman Rd
Dillard Rd
Walmort Rd
Colony Rd
Alta Mesa Rd
CR J8
Bilby Rd
Bruceville Rd
Hood
CR E9
Courtland
Cosumnes River
Sacramento County
Arno Rd
Valensin Rd
Yolo County
Solano County
CR Twin Cities Rd (CR E13)
Simmerhorn Rd
Sargent Ave
A St
Kost Rd
Liberty Rd
Locke
Walnut Grove
Ryde
CR J11
W Walnut Grove Rd
New Hope Rd
Thornton
Dustin Rd
W Peltier Rd
E Peltier Rd
Mokelumne River
N Lower Sacramento Rd
N Thornton Rd
Rio Vista
Isleton
Montezuma Hills Rd
Terminous Rd
W Turner Rd
Holly Dr
W Elm St
Lodi
S Ham Ln
S Hutchins St
S Stockton St
S Cherokee Ln
E Kettleman Ln
Terminous
Sacramento River
E Harney Ln
Davis Rd
N West Ln
Lower Sacramento Rd
N Thornton Rd
E Eight Mile Rd
San Joaquin River
Thornton Rd
Morada Ln
West Ln
E Hammer Ln
Calaveras River
Bethel Island
Oakley
Contra Costa County
San Joaquin County
Pacific Ave
N El Dorado St
W March Ln
E Alpine Ave
N Wilson Way
Cherokee Rd
Nerroly Rd
Hillcrest Ave
Empire Ave
Ohara Ave
Sellers Ave
Delta Rd
Knightsen
Lone Tree Way
Sunset Rd
Byron Hwy
Stockton
Port of Stockton
S Lincoln St
S El Dorado St
Navy Dr
W 8th St
E 8th St
E Mariposa Rd
E Main St
E Fremont St
Chestnut St
Balfour Rd
Fairview Ave
Brentwood
Holt
Old River
Middle River
Deer Valley Rd
Briones Valley Rd
Concord Ave
Walnut Blvd
Marsh Creek Rd
Discovery Bay
Camino Diablo
Byron
Byron Hwy
Howard Rd
W Howard Rd
Tracy Blvd
McKinley Ave
S Airport Way
French Camp
French Camp Rd
Banks Pumping Plant
Jones Pumping Plant
Lathrop Rd
Lathrop
E Louise Ave
N Union Rd
N Main St
Howland Rd
W Yosemite Ave
Manteca
Alameda County
Mountain House
W Bethany Rd
S Lammers Rd
1
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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY
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Miles
Key Map
Central Corridor Power Supply
12/23/2021
Data Source: DCA, DWR
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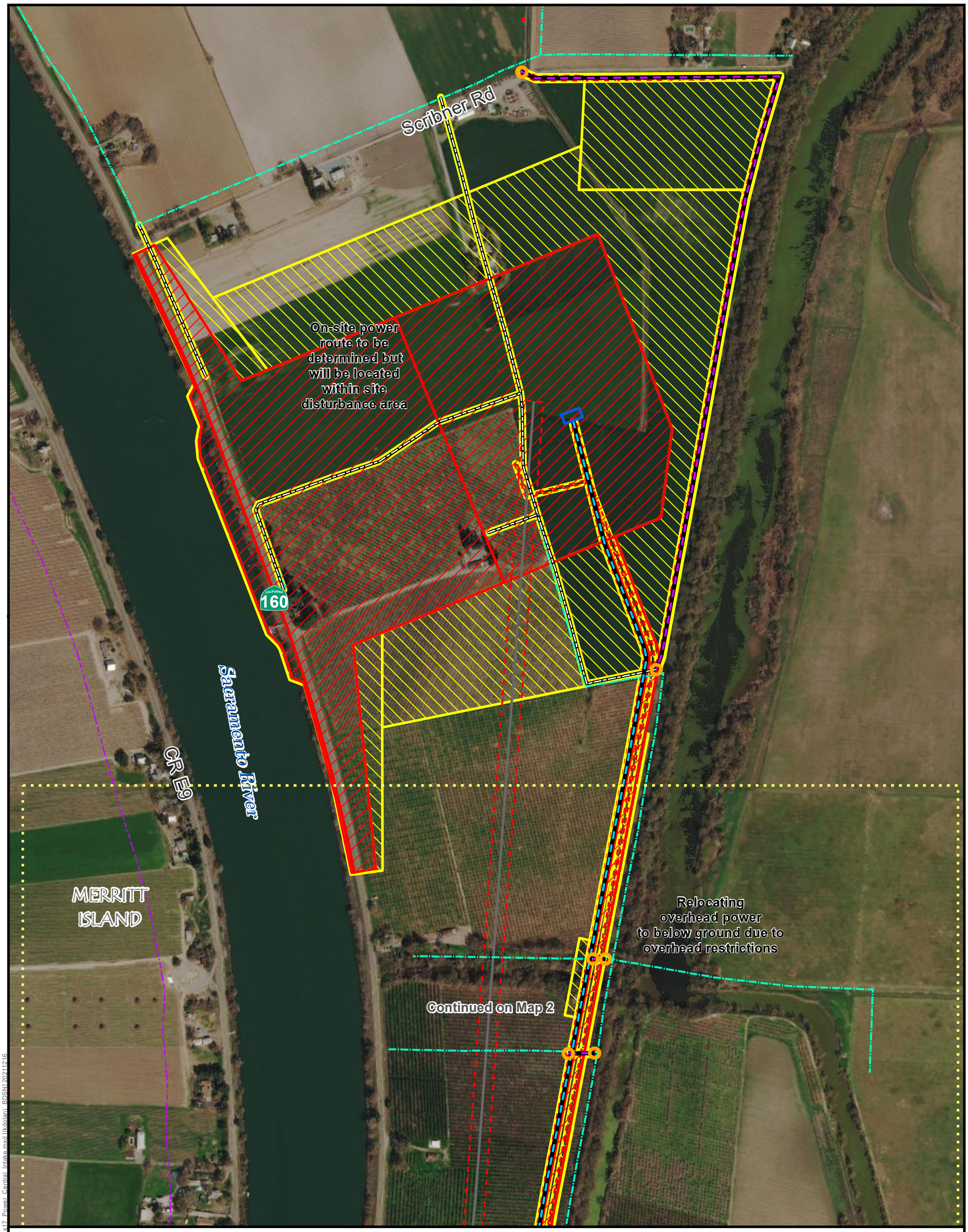

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Connection to Existing Overhead
Proposed Substation
Abandoned Existing Power

Proposed Underground Power
Outside Roadway
Relocated Non-Project Power

Existing Power

PG&E Low Voltage
21-22 kV

SMUD Low Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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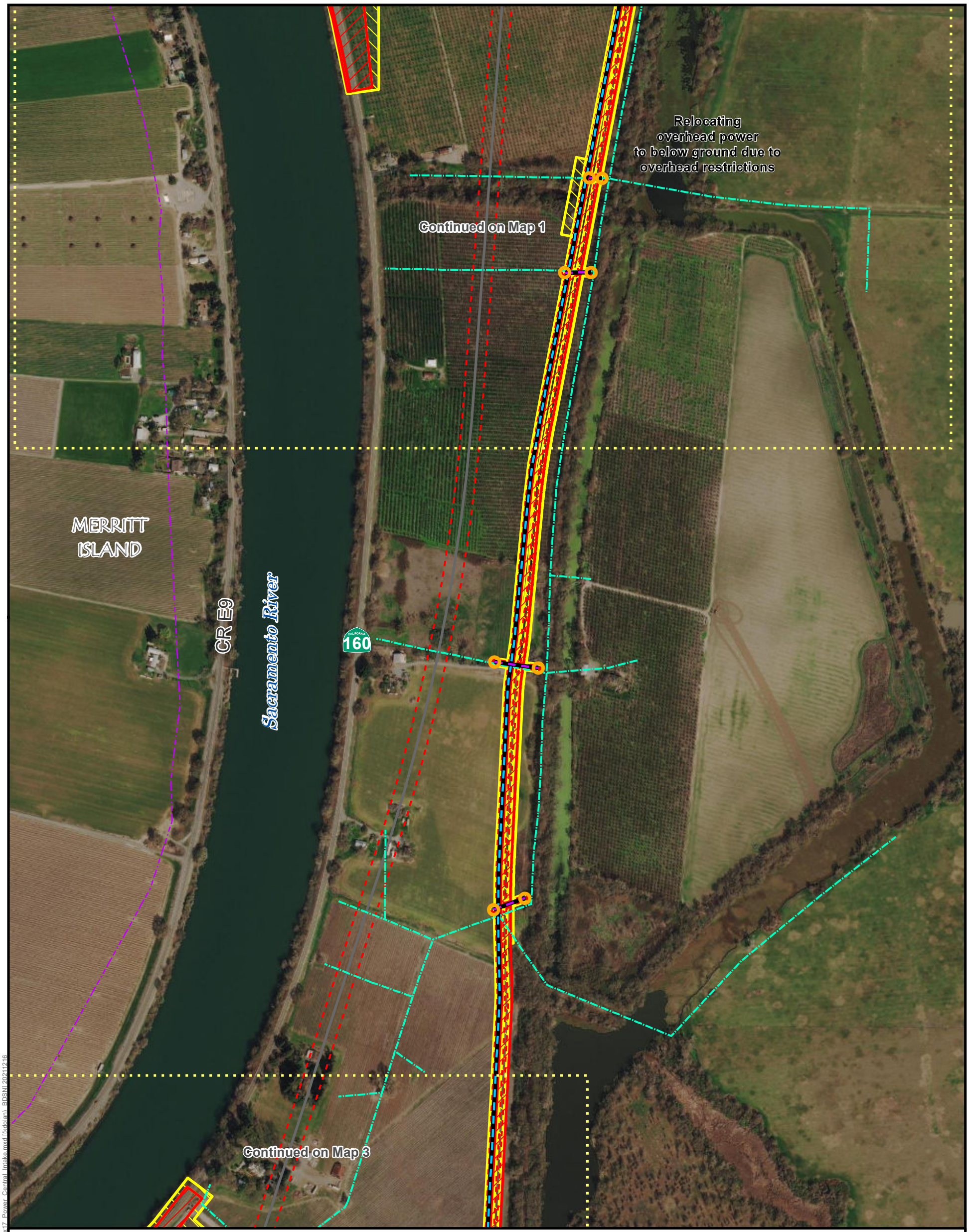
0 500 Feet

Map 1
Central Alternative Power Supply
Intake 2
12/23/2021

Data Source: DCA, DWR

TWGL38\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Central_Intake.mxd jkdolan BDSNJ 20211216



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Connection to Existing Overhead

Proposed Underground Power
Outside Roadway
Relocated Non-Project Power

Existing Power

PG&E Low Voltage
21-22 kV

SMUD Low Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Temporary Surface Impact

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Map 2
Central Alternative Power Supply
Intake Haul Road North
12/23/2021

Data Source: DCA, DWR

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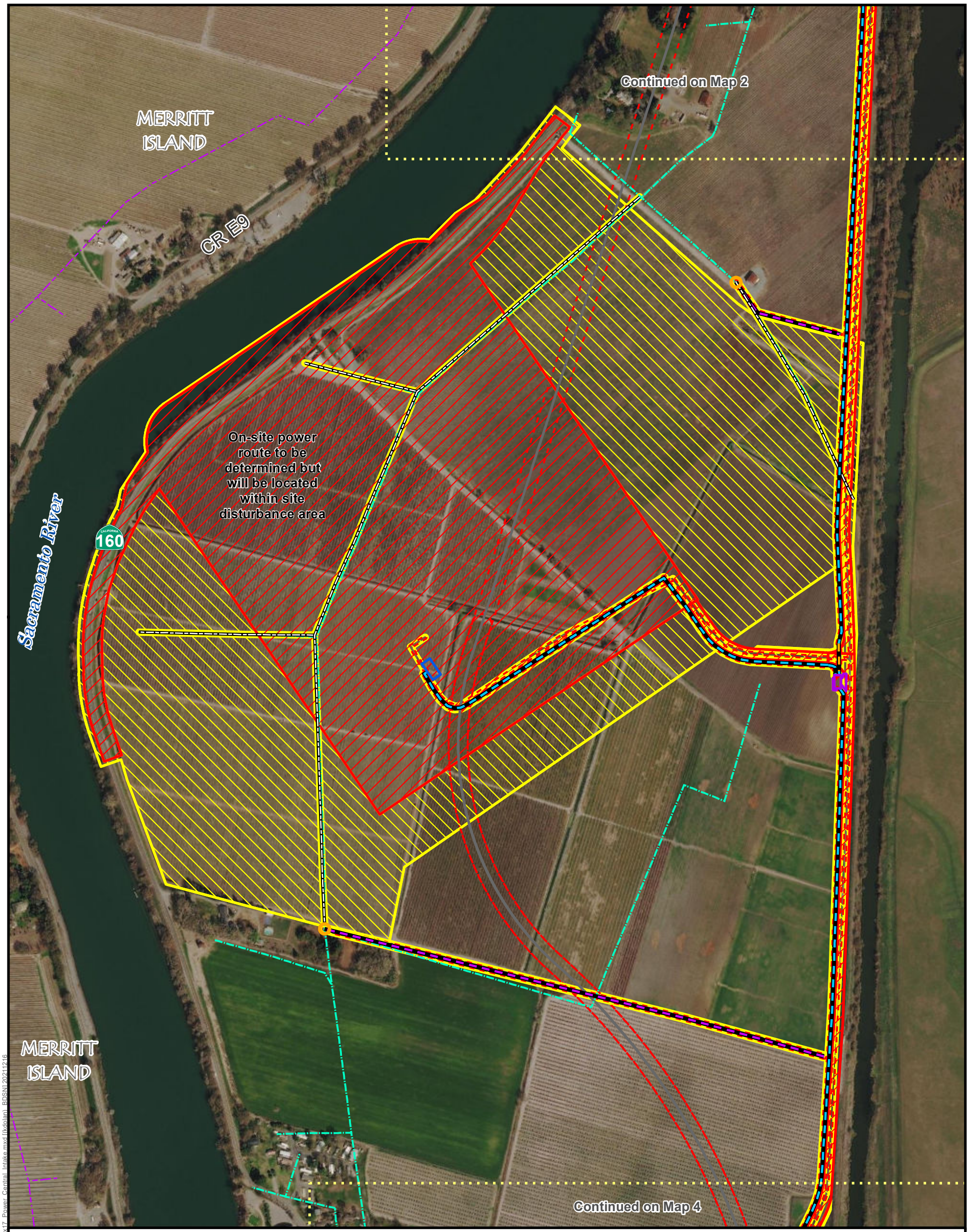

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Connection to Existing Overhead
Proposed Substation
Proposed Switching Station
Abandoned Existing Power

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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Map 3
Central Alternative Power Supply
Intake 3
12/23/2021

Data Source: DCA, DWR

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Continued on Map 3

Hood

3rd St

4th St

5th St

Hood Franklin Rd

Continued on Map 6

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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

Temporary Surface Impact

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Map 4
Central Alternative Power Supply
Intake Haul Road North
12/23/2021

Data Source: DCA, DWR

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MERRITT ISLAND

CR E9

Sacramento River

TEMPORARY

160

On-site power route to be determined but will be located within site disturbance area

RANDALL ISLAND

Continued on Map 6

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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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Map 5
Central Alternative Power Supply
Intake 5
12/23/2021

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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0 500 Feet

Map 6
Central Alternative Power Supply
Intake Haul Road South and Intake 5
12/23/2021

Data Source: DCA, DWR

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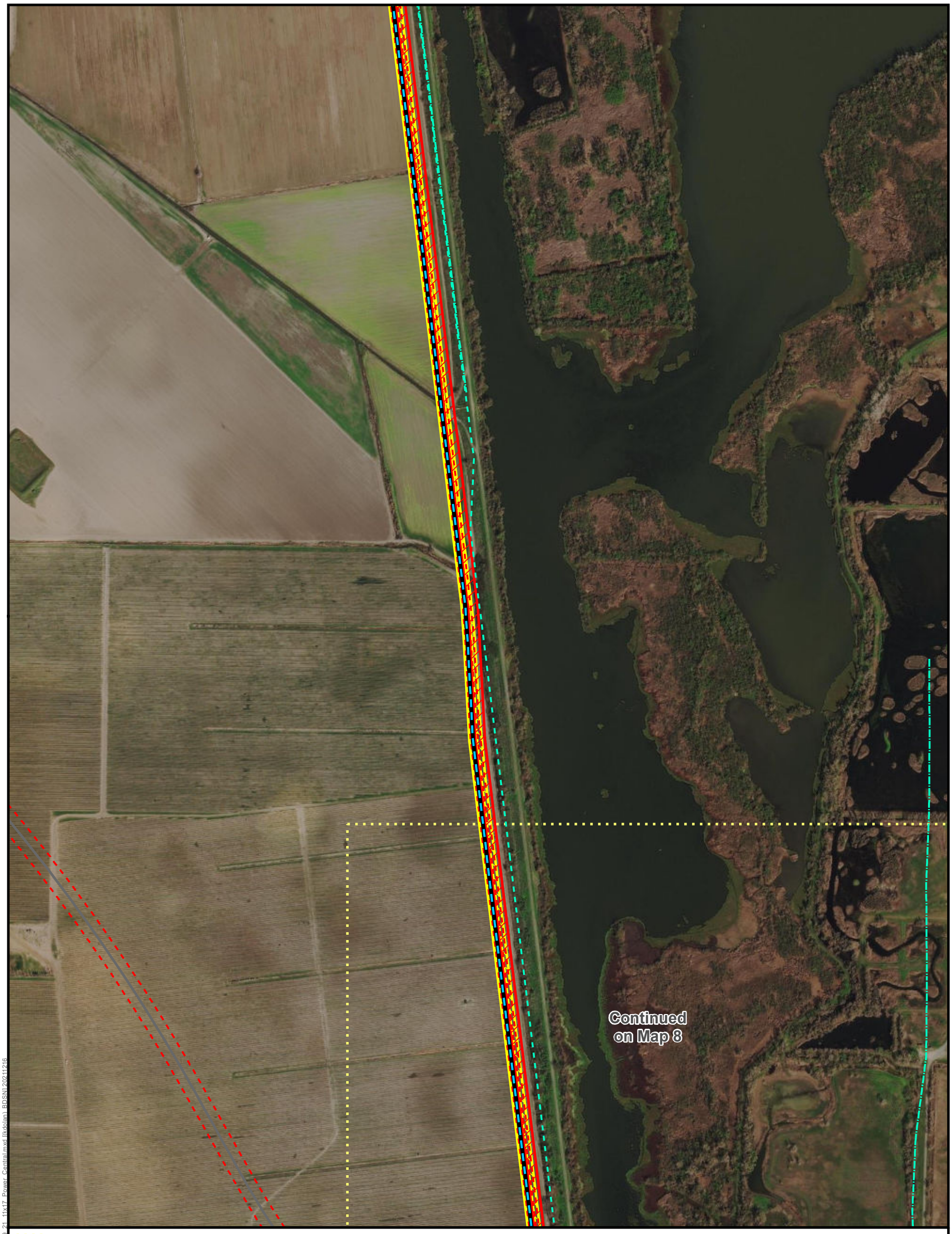

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Proposed Underground Power
Outside Roadway

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

Tunnel

Permanent Subsurface Impact
Temporary Surface Impact

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0 500 Feet

Map 7
Central Alternative Power Supply
Intake Haul Road South
12/23/2021

Data Source: DCA, DWR

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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
- Temporary Surface Impact

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Map 8
Central Alternative Power Supply
Intake Haul Road South and Lambert Road
12/23/2021

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
Temporary Surface Impact

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0 500 Feet

Map 9
Central Alternative Power Supply
Lambert Road
12/23/2021

Data Source: DCA, DWR

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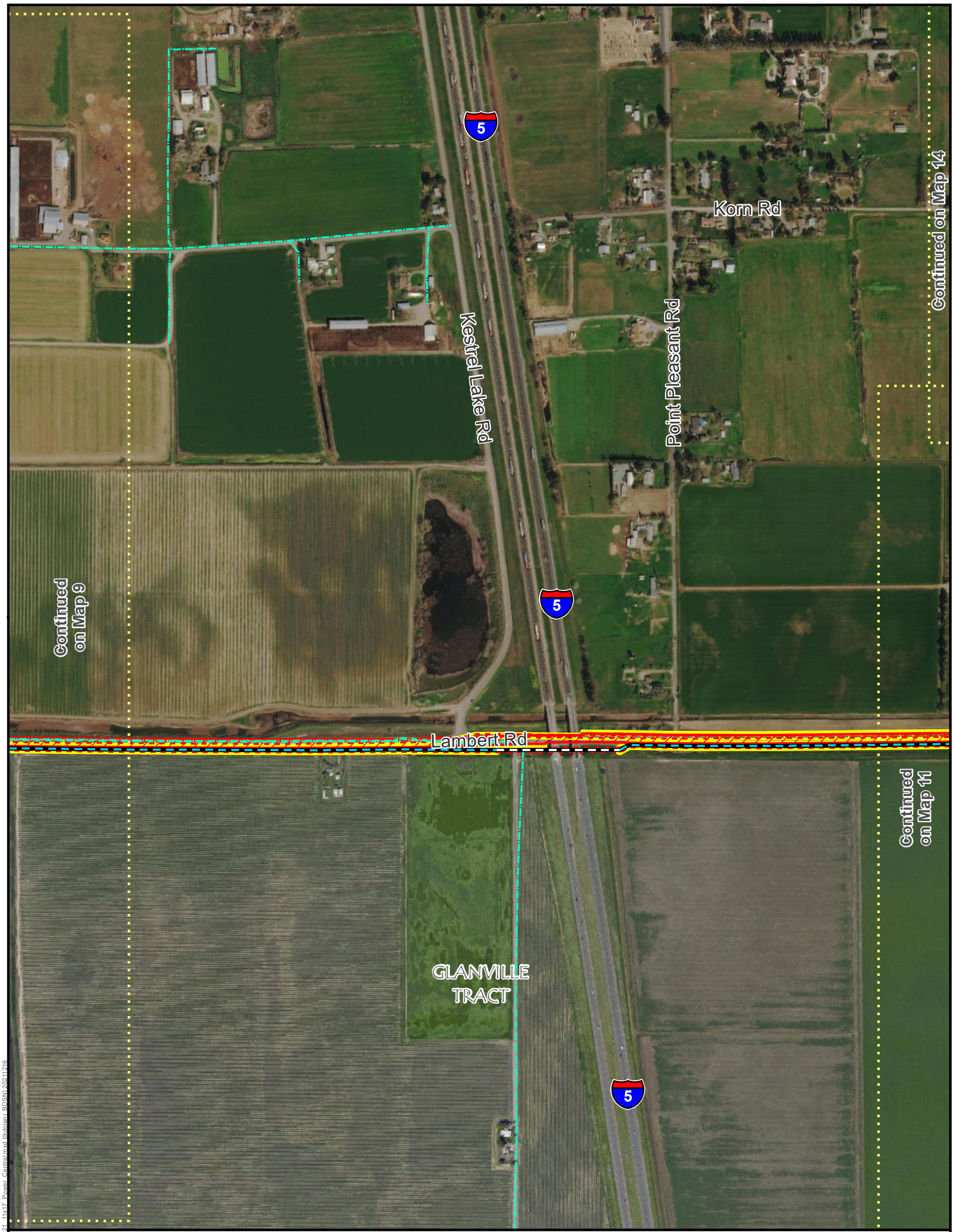

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Proposed Underground Power
Outside Roadway
Trenchless Installation

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

Permanent Subsurface Impact
Temporary Surface Impact

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0 500 Feet

Map 10
Central Alternative Power Supply
Lambert Road
12/23/2021

Data Source: DCA, DWR

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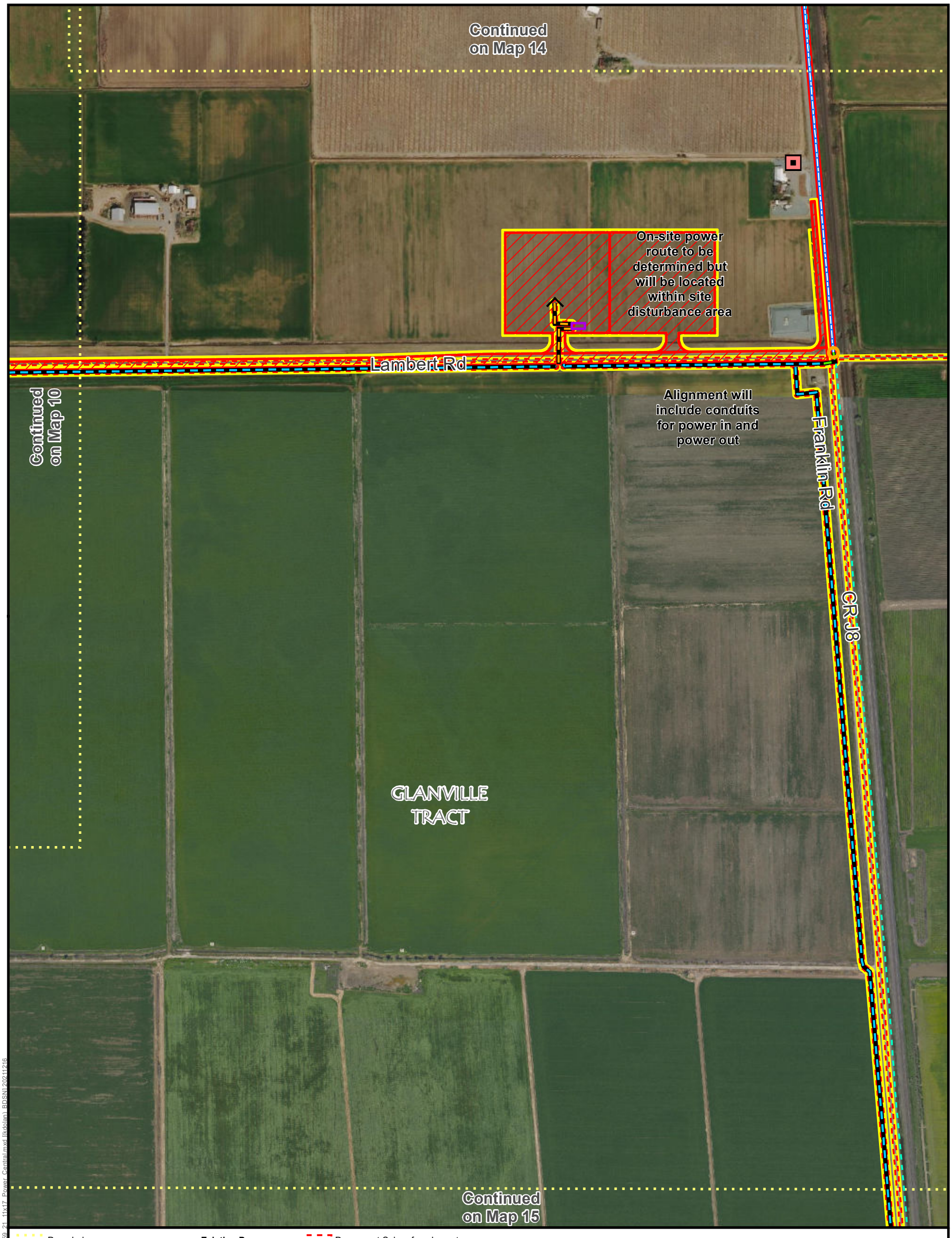

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Existing Substation
Connection to Existing Overhead
Proposed Switching Station

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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0 500 Feet

Map 11
Central Alternative Power Supply
Lambert Road/Franklin Concrete Batch Plant
12/23/2021

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
230 kV

Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 12
Central Alternative Power Supply
Franklin Road
12/23/2021

Data Source: DCA, DWR

TWGI:38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21_11x17_Power_Central.mxd (kdolan) BDSNI 20211216

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Proposed Overhead Power
New Line on Existing Poles

Existing Power
SMUD High Voltage
60-70 kV
230 kV

Permanent Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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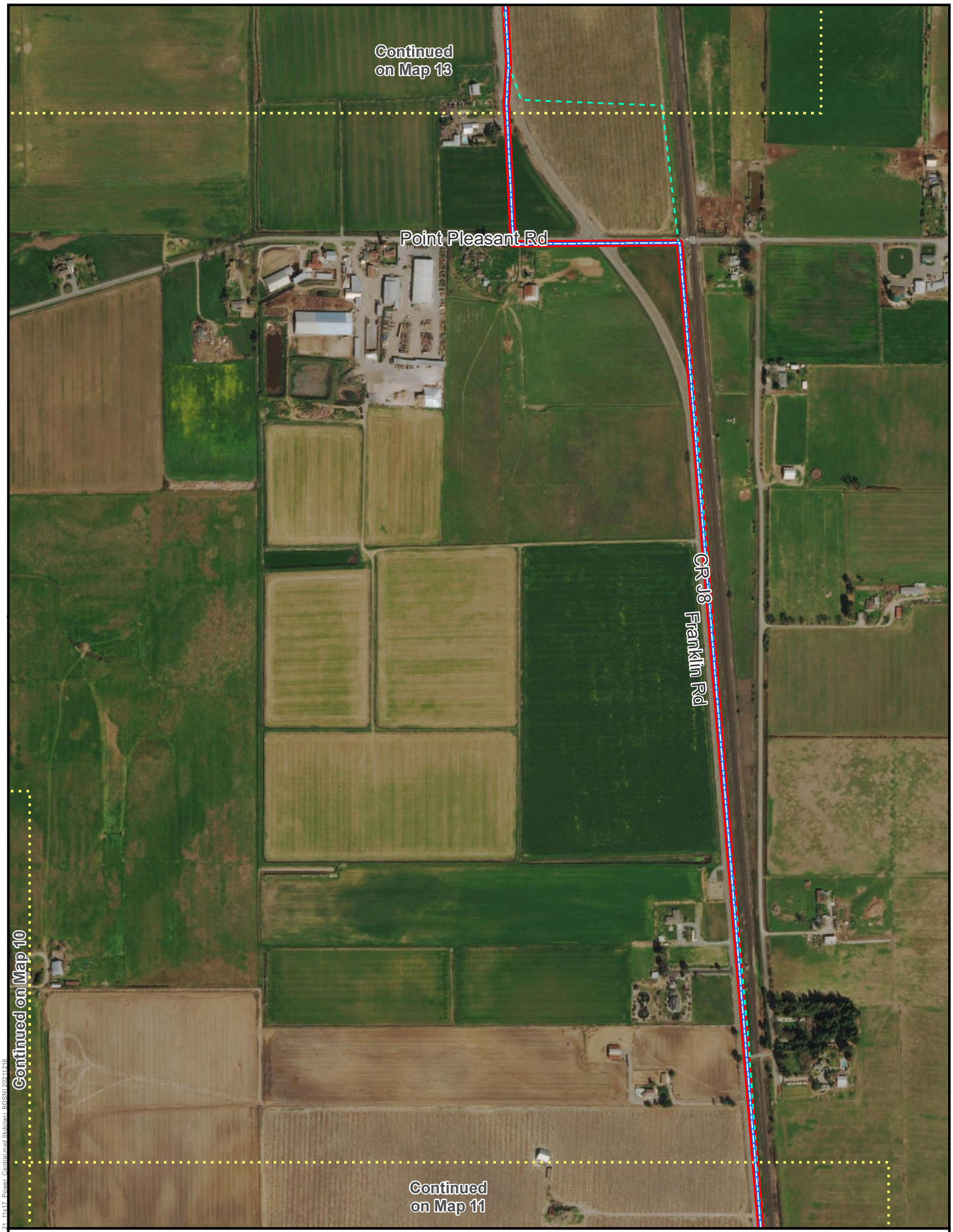
N

0 500 Feet

Map 13
Central Alternative Power Supply
Franklin Road
12/23/2021

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 Surface Impact

CONFIDENTIAL ATTORNEY-CLIENT PRIVILEGE DISCUSSION DRAFT

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 14
Central Alternative Power Supply
Franklin Road
12/23/2021

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

CONFIDENTIAL ATTORNEY-CLIENT PRIVILEGE DISCUSSION DRAFT

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 15
Central Alternative Power Supply
Twin Cities Complex
12/23/2021

Data Source: DCA, DWR

Mokelumne River

Barber Rd

On-site power route to be determined but will be located within site disturbance area

NEW HOPE TRACT

Vail Rd

Lauffer Rd

Connection to Existing Overhead
Proposed 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

CONFIDENTIAL ATTORNEY-CLIENT PRIVILEGE DISCUSSION DRAFT

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 16
Central Alternative Power Supply
New Hope Tract
12/23/2021

Data Source: DCA, DWR

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

Existing Power
PG&E Low Voltage
11 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

CONFIDENTIAL ATTORNEY-CLIENT PRIVILEGE DISCUSSION DRAFT

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

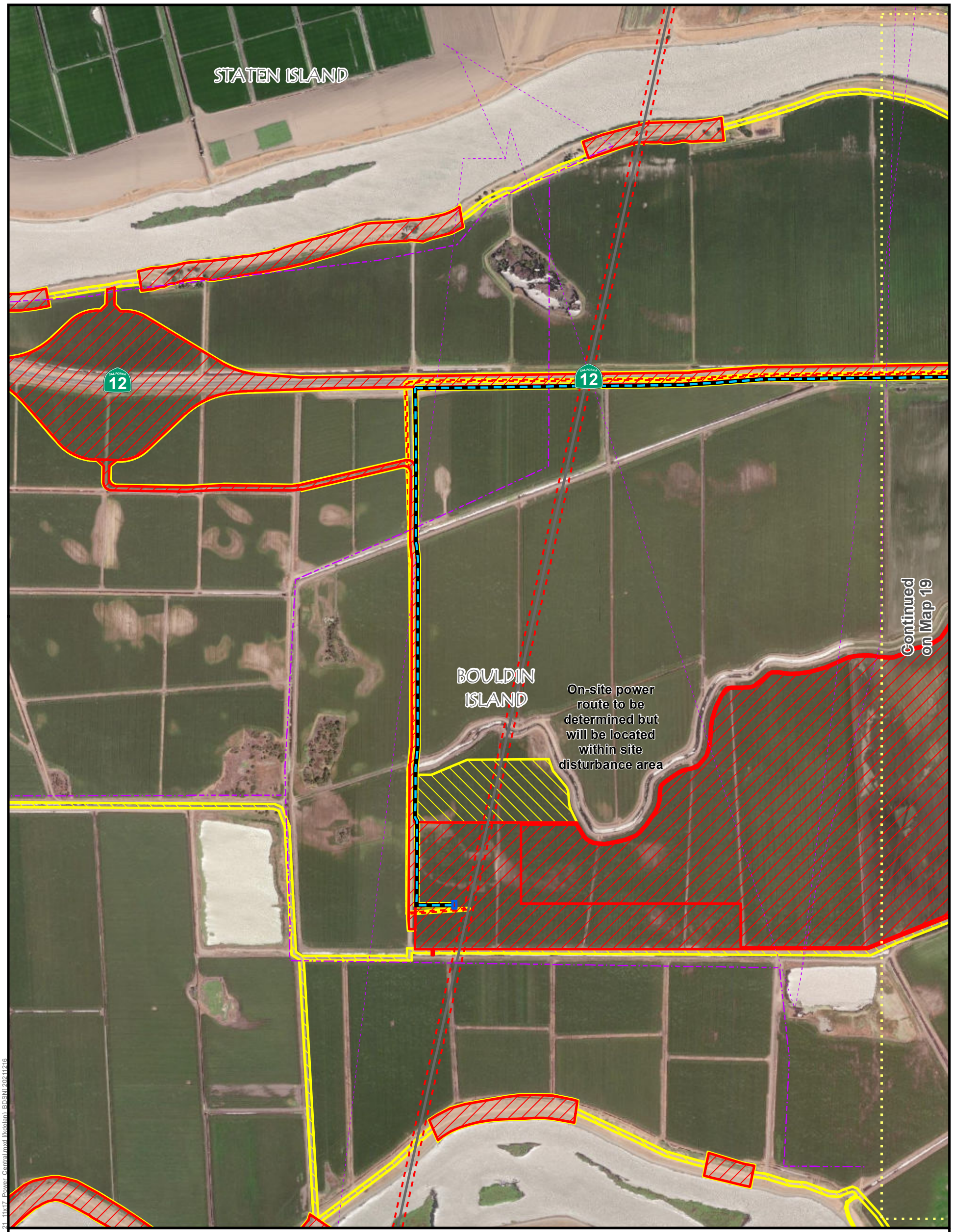
N

0 500 Feet

Map 17
Central Alternative Power Supply
Staten Island
12/23/2021

Data Source: DCA, DWR

TWGL38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Central.mxd lkdolan 20211216



Page Index
Proposed Substation
Proposed Underground Power
Outside Roadway

Existing Power
PG&E Low Voltage
11 kV
21-22 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

CONFIDENTIAL ATTORNEY-CLIENT PRIVILEGE DISCUSSION DRAFT

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 1,000 Feet

Map 18
Central Alternative Power Supply
Bouldin Island
12/23/2021

Data Source: DCA, DWR

T:\WG138\GIS_33_00\GISRequest_14\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Central.mxd rkolan) BDSN) 20211216

STATEN ISLAND

Glasscock Rd

12

Terminous

Potato Rd

TERMINOUS TRACT

Continued on Map 18

BOULDIN ISLAND

Continued on Map 20

EMPIRE TRACT

Page Index

Proposed Underground Power
- Within Existing Roadway
- Outside Roadway
- Trenchless Installation

Existing Power
PG&E Low Voltage
- 11 kV

- Permanent Subsurface Impact
- Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 1,000 Feet

Map 19
Central Alternative Power Supply
Bouldin Island
12/23/2021

Data Source: DCA, DWR

Page Index

Proposed Underground Power
Within Existing Roadway
Outside Roadway

Existing Power
PG&E Low Voltage
11 kV

Permanent Subsurface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 1,000 Feet

Map 20
Central Alternative Power Supply
State Highway 12
12/23/2021

Data Source: DCA, DWR

TWGIS-38\GIS_33_000\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Central.mxd (lkdolan) BDSN 20211216

Page Index
Existing Substation

Proposed Underground Power
Within Existing Roadway
Outside Roadway

Existing Power
PG&E Low Voltage
11 kV
60-70 kV

Permanent Subsurface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 1,000 Feet

Map 21
Central Alternative Power Supply
State Highway 12
12/23/2021

Data Source: DCA, DWR

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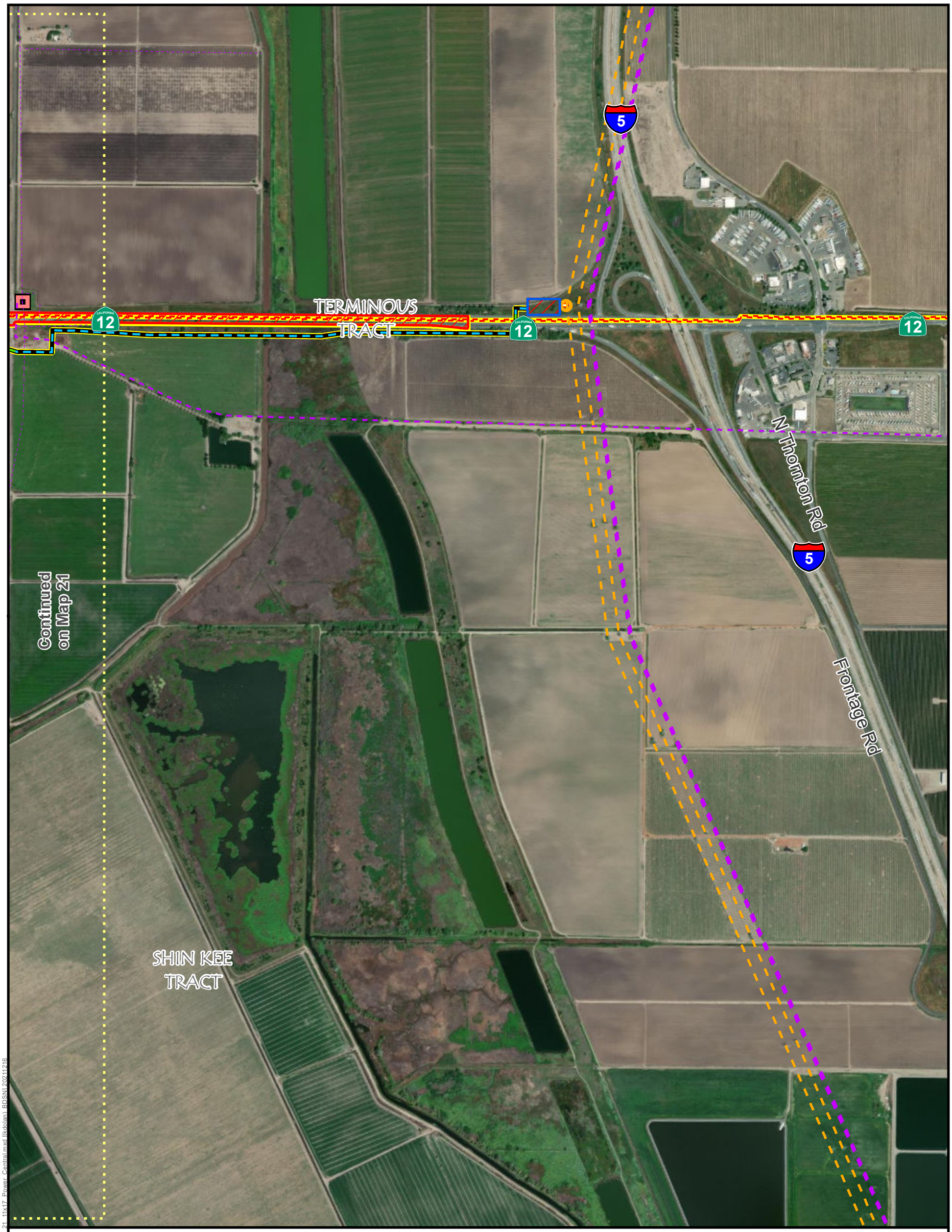

Page Index
Existing Substation
Connection to Existing Overhead
Proposed Substation
Proposed Underground Power
Within Existing Roadway
Outside Roadway
Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
230 kV
60-70 kV
WAPA
230 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 1,000 Feet

Map 22
Central Alternative Power Supply
State Highway 12
12/23/2021

Data Source: DCA, DWR

TWG138\GIS_33_00\GISRequest_14\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Central.mxd ikkolani BDSN 20211216

Connection to Existing Overhead
Proposed 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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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

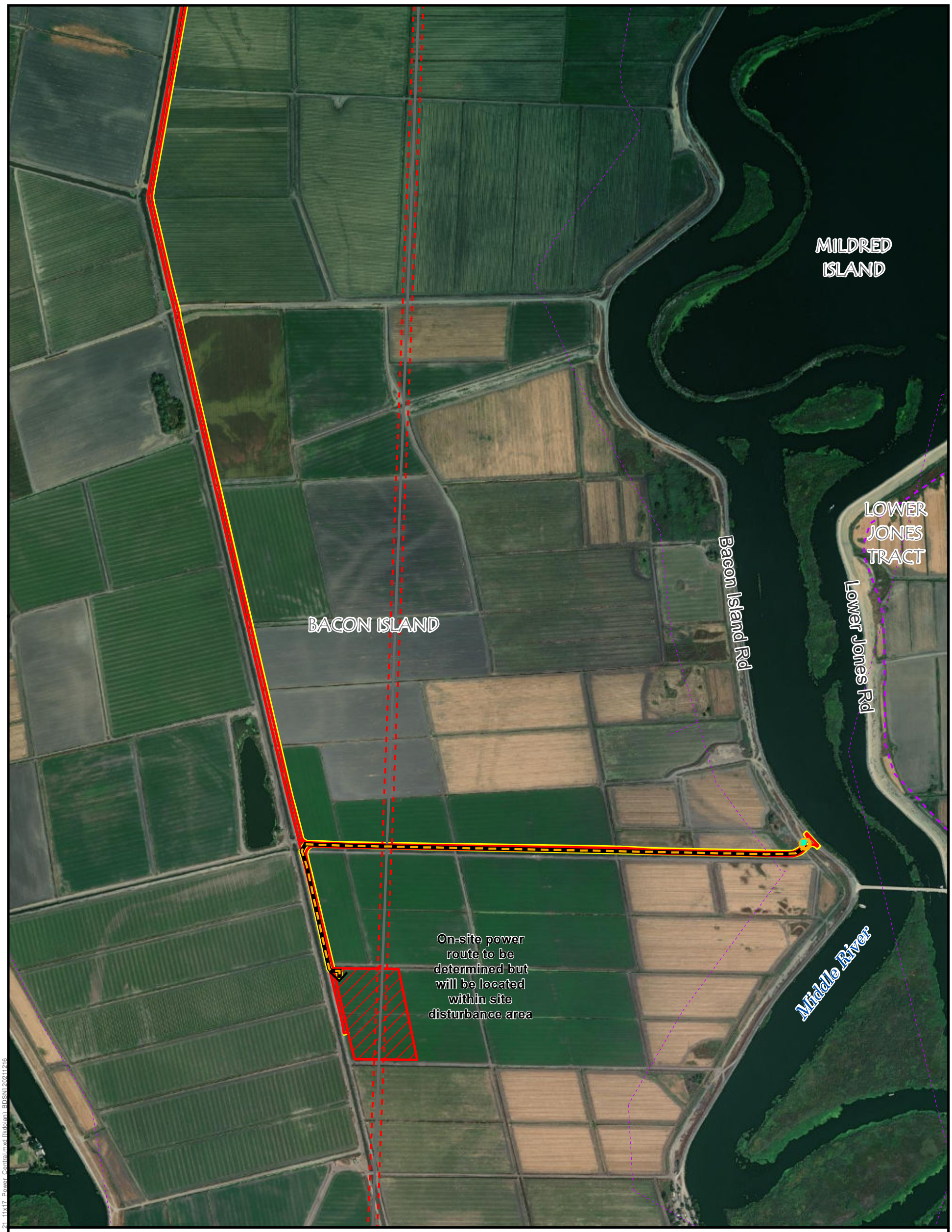
N

0 500 1,000 Feet

Map 23
Central Alternative Power Supply
Mandeville Island
12/23/2021

Data Source: DCA, DWR

P:\WO\1-38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG169_21_11x17_Power_CentralAlt.mxd (lkdolan) BDSNI 20211216



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

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 1,000 Feet

Map 24
Central Alternative Power Supply
Bacon Island
12/23/2021

Data Source: DCA, DWR

TWGI:3&\GIS_33_00\GISRequest_11E\Deliverable_10E\ENG169_21\ENG169_21_11x17_Power_Central.mxd (kkolan) BDSN 20211216

On-site power route to be determined but will be located within site disturbance area

Diablo

BYRON TRACT

Continued on Map 28

Continued on Map 26

Western Farms Ranch Rd

Page Index
Proposed Substation
Proposed Underground Power
Within Proposed Roadway
Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E High Voltage
500 kV
WAPA
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

CONFIDENTIAL ATTORNEY-CLIENT PRIVILEGE DISCUSSION DRAFT

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

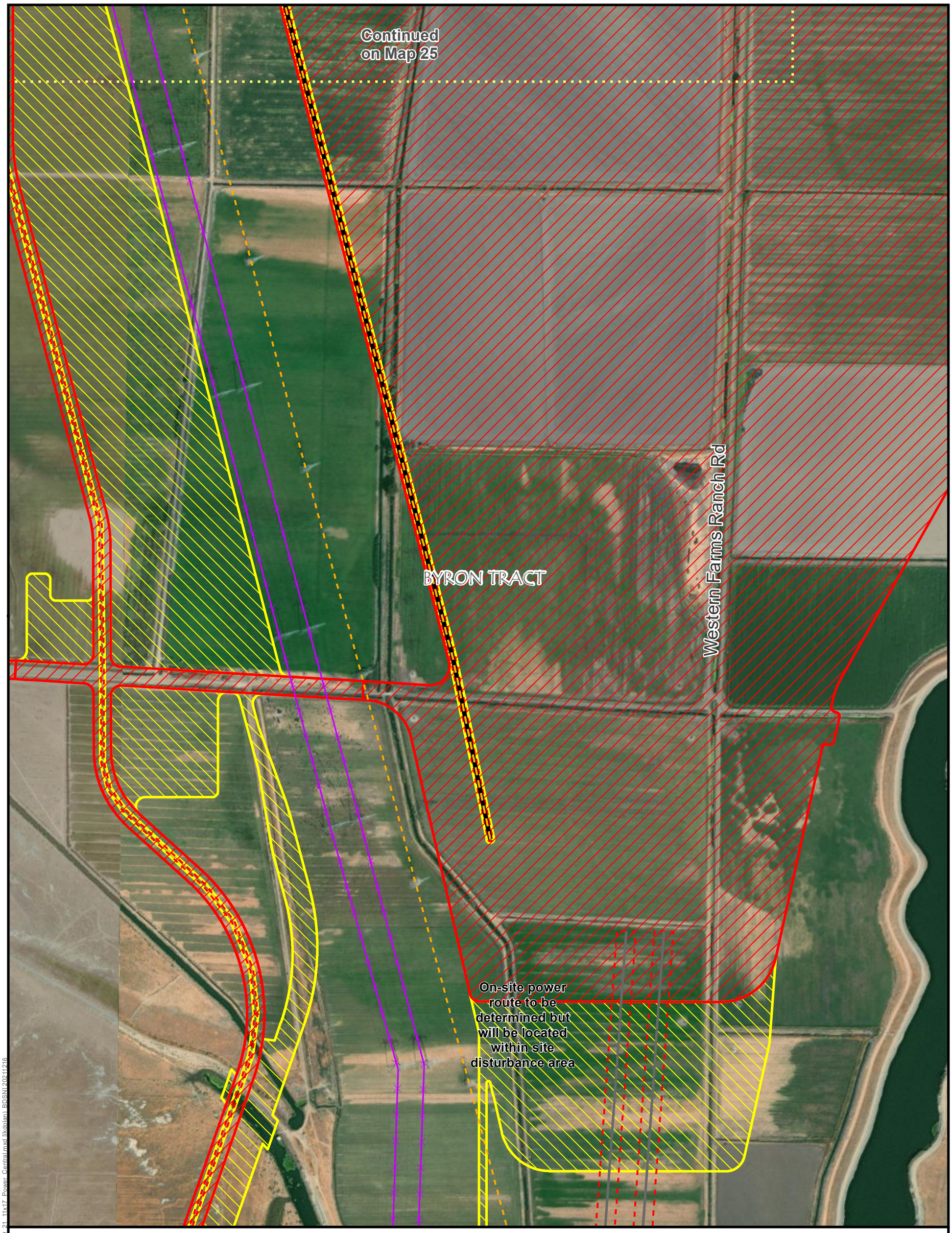
N

0 500 Feet

Map 25
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_11E\Deliverable_10E\ENG169_21\ENG169_21_11x17_Power_Central.mxd (kdolan) BDSN\20211216



Page Index
Proposed Underground Power
Within Proposed Roadway

Existing Power
PG&E High Voltage
500 kV
WAPA
60-70 kV

Tunnel

Permanent Subsurface Impact
Temporary Surface Impact

CONFIDENTIAL ATTORNEY-CLIENT
PRIVILEGE DISCUSSION DRAFT

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

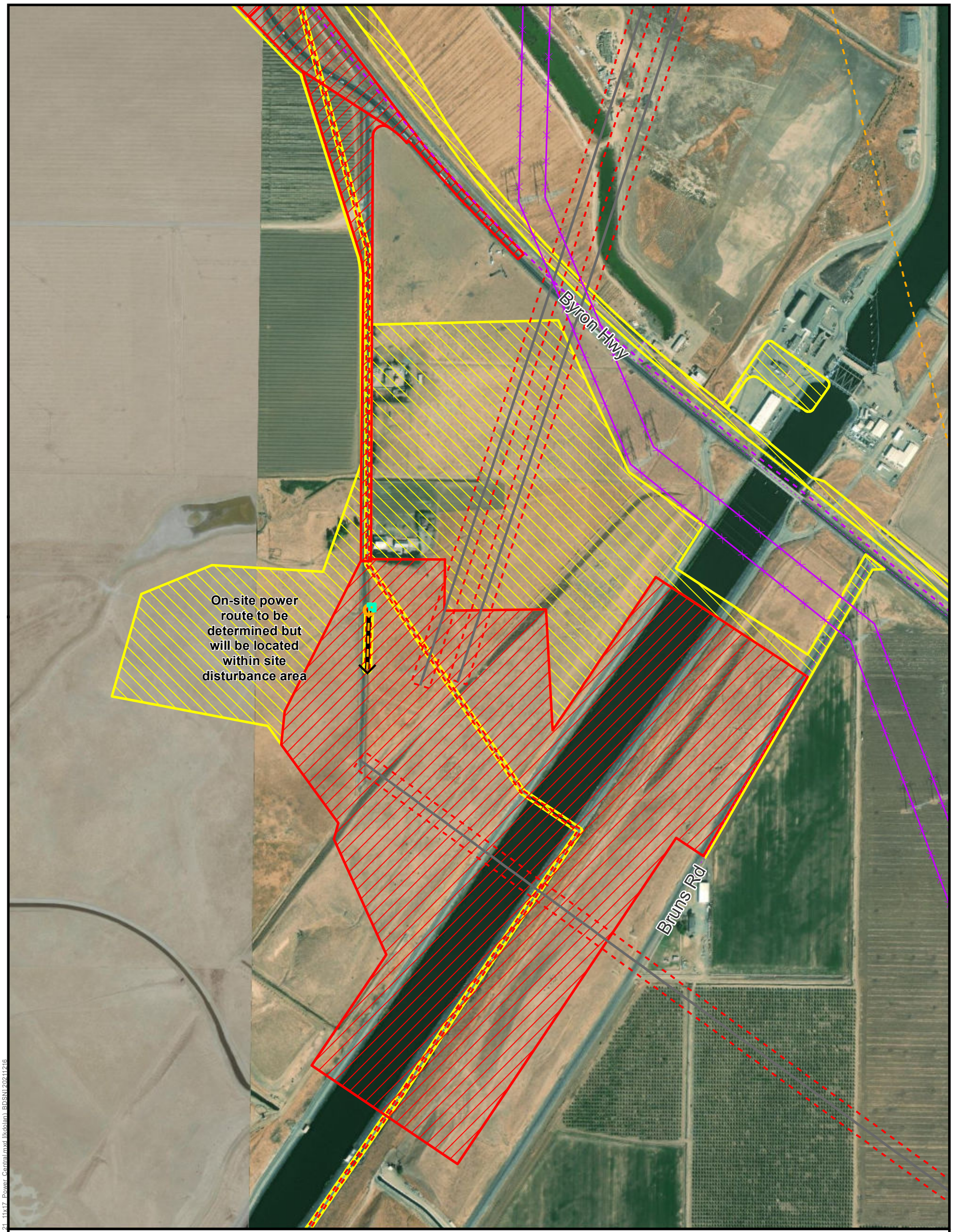
N

0 500 Feet

Map 26
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGI-38\GIS_33_00\GISRequest_11\Deliverable_10\ENG\169_21_11x17_Power_Central.mxd (ldolan) BDSN\20211216



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

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
500 kV
WAPA
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

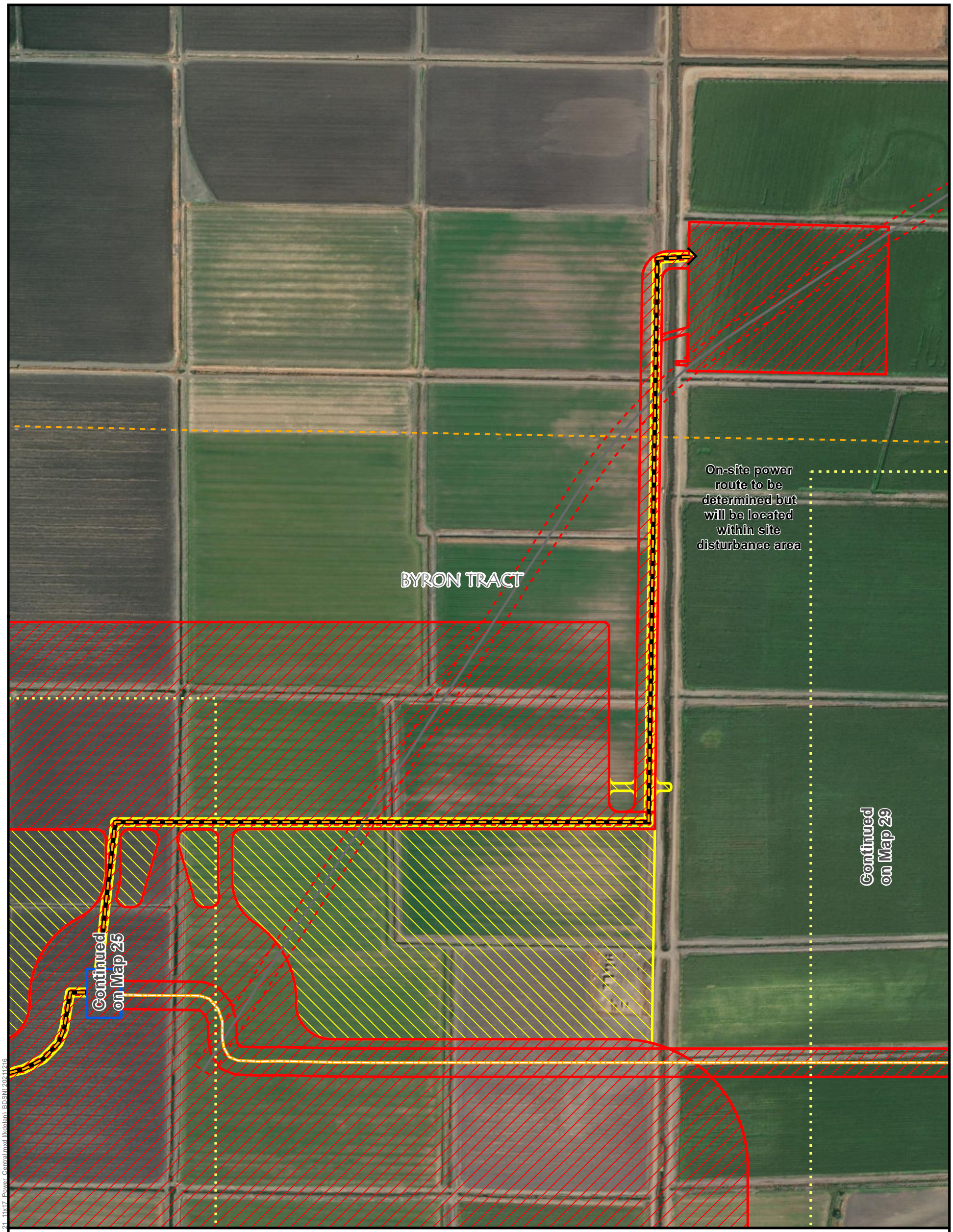
N

0 500 Feet

Map 27
Central Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG159_21\ENG159_21_11x17_Power_Central.mxd (ikdolan) BDSN\20211216



Page Index
Proposed Substation
Proposed Underground Power
Within Proposed Roadway
Proposed Overhead Power
New Line and Poles/Towers

Existing Power WAPA
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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For Illustration Purposes Only

N

0 500 Feet

Map 28
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV

Permanent Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 29
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGL-58\GIS_83_00\GISRequest_11\Deliverable_10\ENG\159_21_11x17_Power_Central.mxd (lkdolan) BDSN 20211216

Page Index
Proposed Underground Power
Outside Roadway
Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 30
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_15\Deliverable_10\EIR\G159_21_11x17_Power_Central.mxd (lkolan) 8/DSN\20211216

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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
Other
TANC 500 kV

Permanent Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 31
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

Continued on Map 31

CONEY ISLAND

Old River

UNION ISLAND

Continued on Map 33

Herdlyn Rd

Page Index

Proposed Underground Power
Outside Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
WAPA
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 32
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGL-SB\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21_11x17_Power_Central.mxd (lkdolan) BDSN 20211216

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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
WAPA
230 kV
Other
TANC 500 kV

Permanent Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

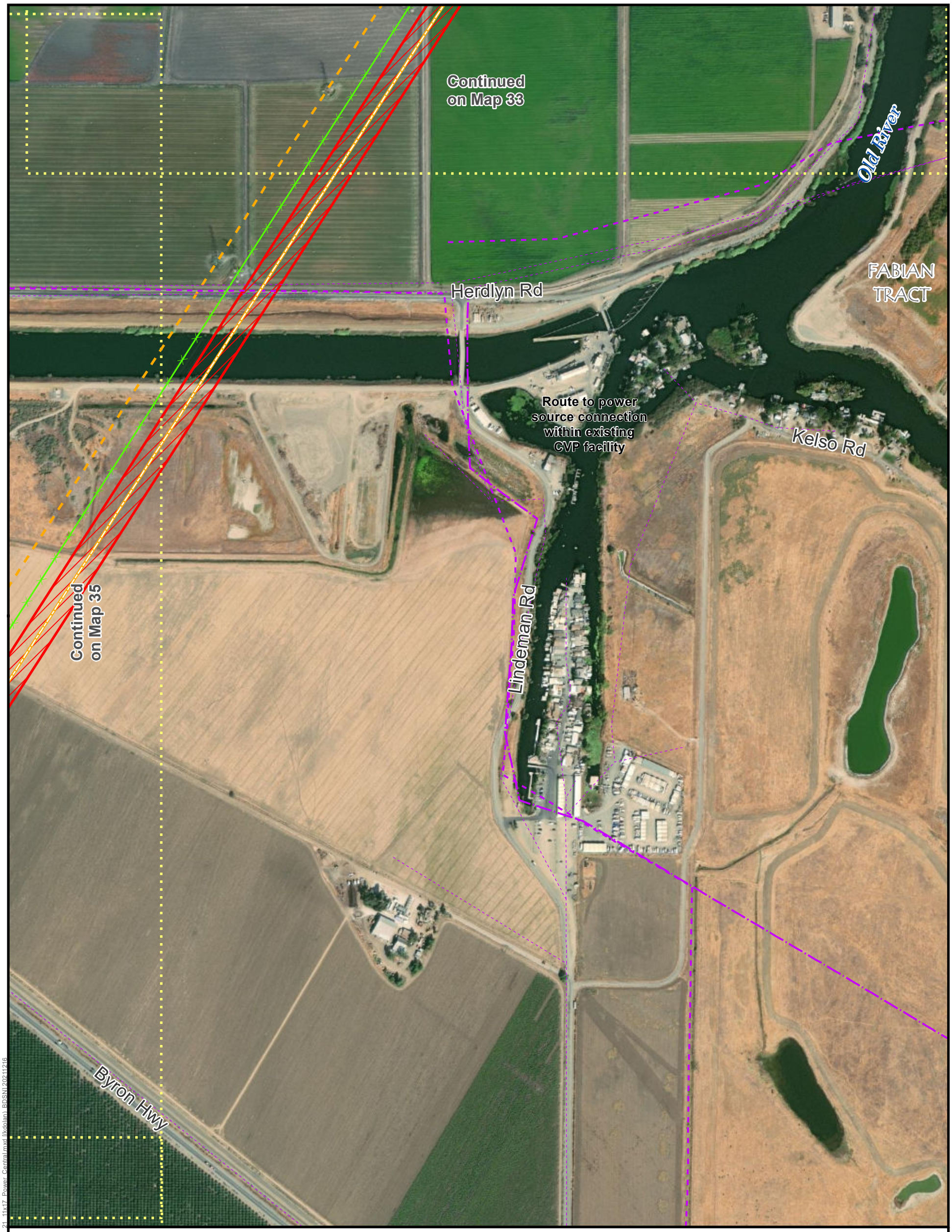
N

0 500 Feet

Map 33
Central Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWCI-38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG169_21_11x17_Power_CentralMxd_IlkdolanJ_BDSNJ_20211216



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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
115 kV
WAPA
230 kV
Other
TANC 500 kV

Permanent Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 34
Central Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

TWGL-38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21_11x17_Power_Central.mxd (lkdolan) BDSN| 20211216

Herdlyn Rd

Continued on Map 33

On-site power route to be determined but will be located within site disturbance area

Byron Hwy

Mountain House Rd

Continued on Map 34

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Proposed Underground Power
Outside Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power

PG&E Low Voltage
11 kV

PG&E High Voltage
60-70 kV

WAPA
230 kV

Other
TANC 500 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

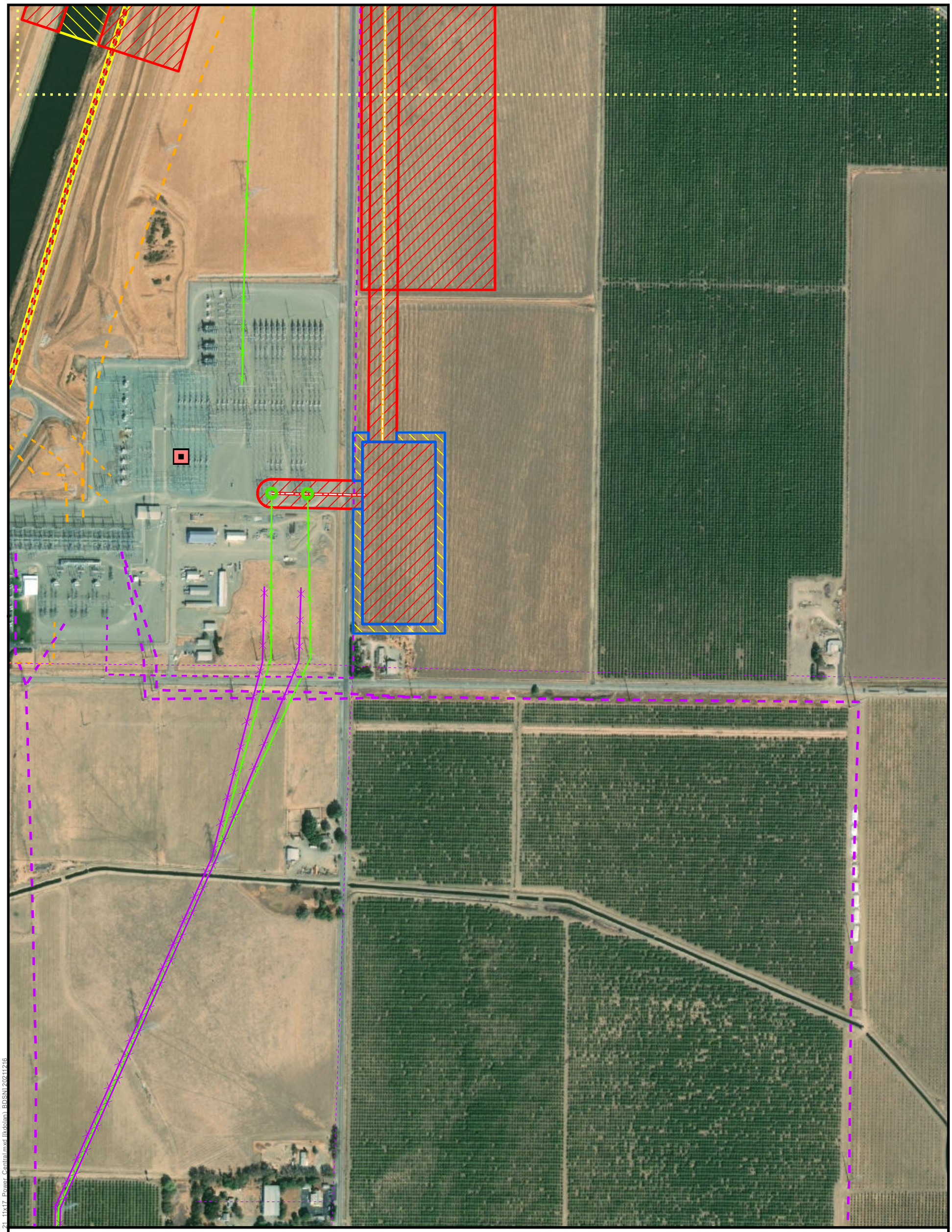
N

0 500 Feet

Map 35
Central Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

TWGI:38\GIS_33_00\GISRequest_11E\Deliverable_10E\ENG169_21\ENG169_21_11x17_Power_Central.mxd (kkolan) BDSN 20211216



Page Index
Existing Substation
Connection to Existing Substation
Proposed Substation

Proposed Overhead Power
New Line and Poles/Towers
Overhead New

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
500 kV
230 kV
WAPA
60-70 kV
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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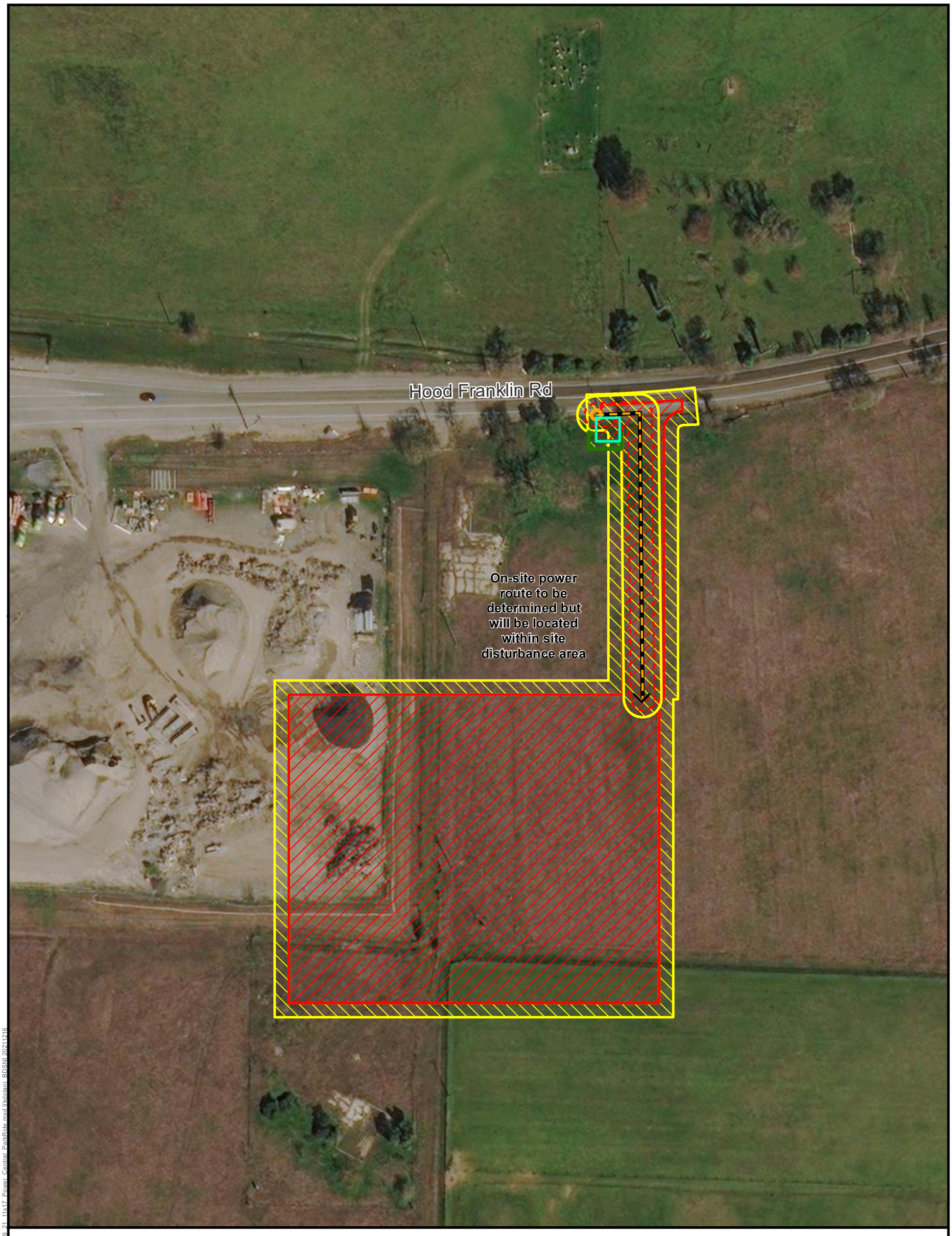
N
0 500 Feet

Map 36
Central Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

T:\WGL38\GIS_33_00\GISRequest_14\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_CentralAlt.mxd (kkolan) BDSN 20211216



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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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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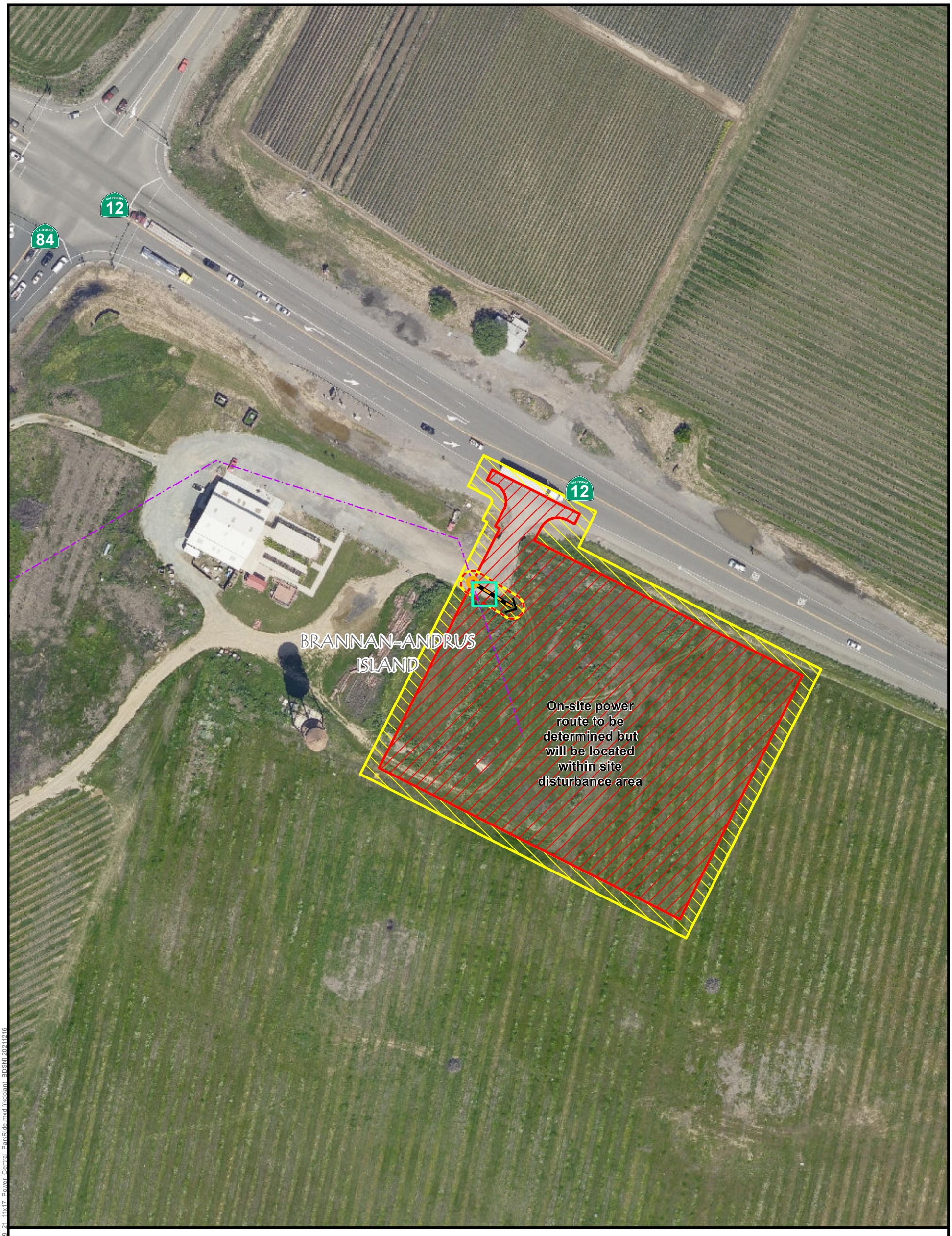
N

0 100 Feet

Map 37
Central Alternative Power Supply
Hood Franklin Park & Ride
12/23/2021

Data Source: DCA, DWR

J:\WGI-38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Central_ParkRide.mxd (kkolan) 20211216



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

Existing Power
PG&E Low Voltage
21-22 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 100 Feet

Map 38
Central Alternative Power Supply
Rio Vista Park & Ride
12/23/2021

Data Source: DCA, DWR

T:\WG1-3&IGIS_33_00\GISRequest_11\EIDeliverable_10\ENG159_21\ENG159_21_11x17_Power_Central_ParkRide.mxd (kkolan) 20211216

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

Existing Power
PG&E Low Voltage
21-22 kV
PG&E High Voltage
60-70 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 100 Feet

Map 39
Central Alternative Power Supply
Byron Park & Ride
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_11E\Deliverable_10E\ENG159_21\ENG159_21_11x17_Power_Central_ParkRide.mxd (kdolan) BDSNI 20211216

Henderson Rd

On-site power route to be determined but will be located within site disturbance area

W Bethany Rd

W Byron Rd

Connection to Existing Overhead
Proposed Metering Area

Proposed Underground Power
Within Existing Roadway
Within Proposed Roadway

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 100 Feet

Map 40
Central Alternative Power Supply
Bethany Park & Ride
12/23/2021

Data Source: DCA, DWR

\\DWGL-38\GIS_83_00\GISRequest_11\Deliverable_10\ENG\159_21\ENG159_21_11x17_Power_Central_ParkRide.mxd (ddolph) BDSNI 20211216

Connection to Existing Overhead
Proposed Metering Area

Proposed Overhead Power
New Line and Poles/Towers

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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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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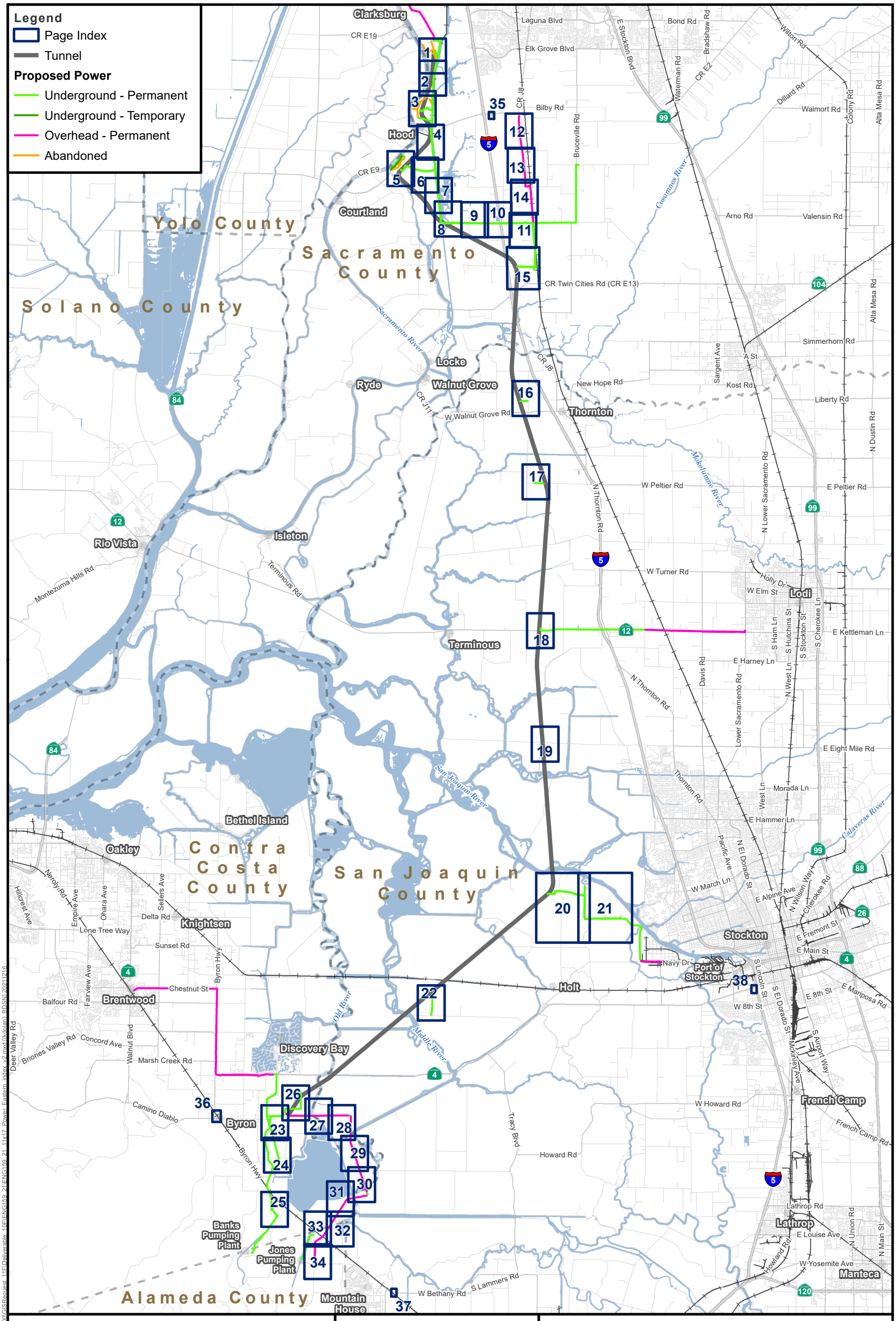
N
0 100 Feet

Map 41
Central Alternative Power Supply
Charter Way Park & Ride
12/23/2021

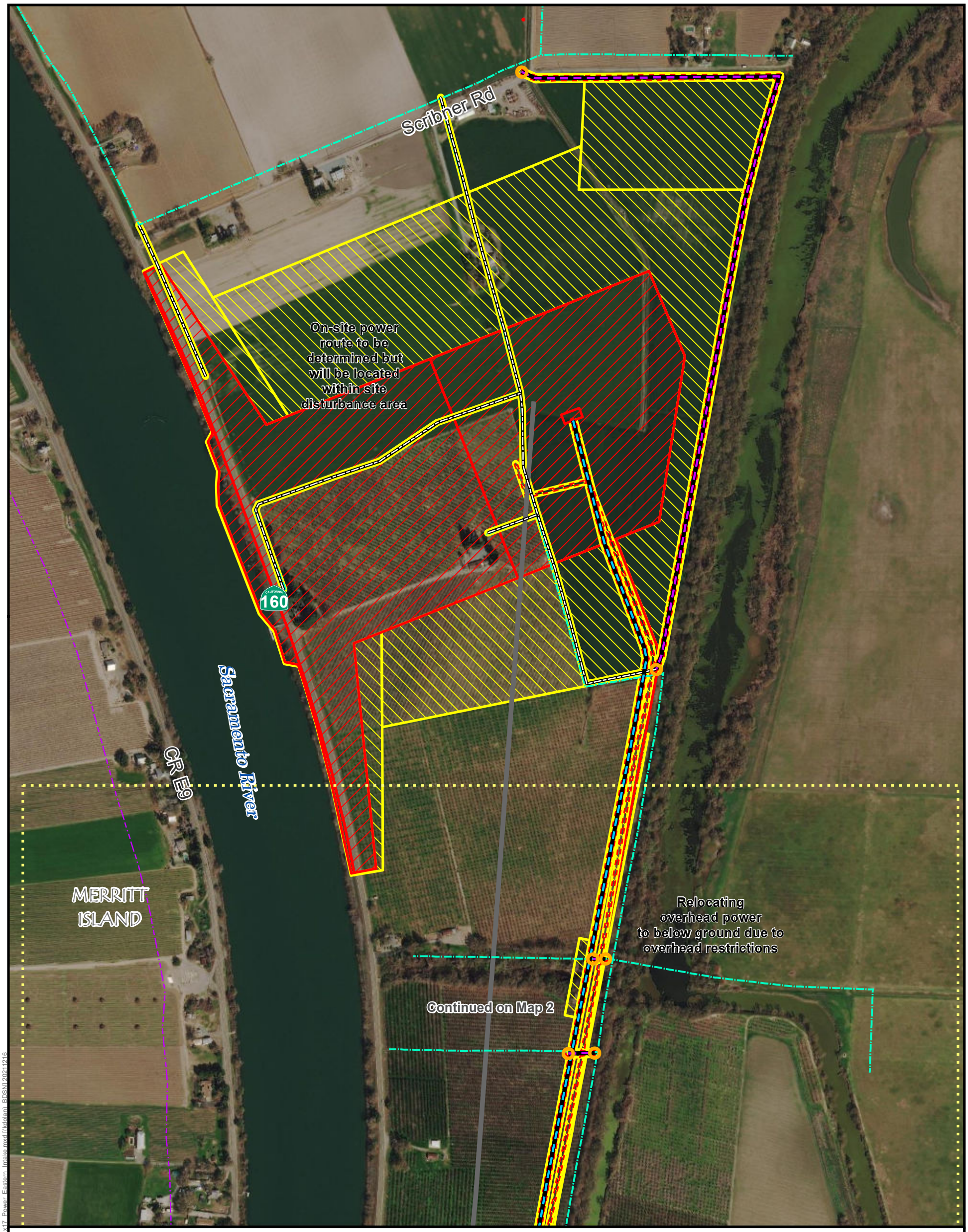
Data Source: DCA, DWR

TWGL-38\GIS_83_00\GISRequest_11\Deliverable_10\ENG\159_21_11x17_Power_Central_ParkRide.mxd jkdolan1 BDSN 20211216

Appendix B
Eastern Corridor Power Supply



Data Source: DCA, DWR



Page Index
Connection to Existing Overhead
Abandoned Existing Power

Proposed Underground Power
Outside Roadway
Relocated Non-Project Power

Existing Power

PG&E Low Voltage
21-22 kV

SMUD High Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

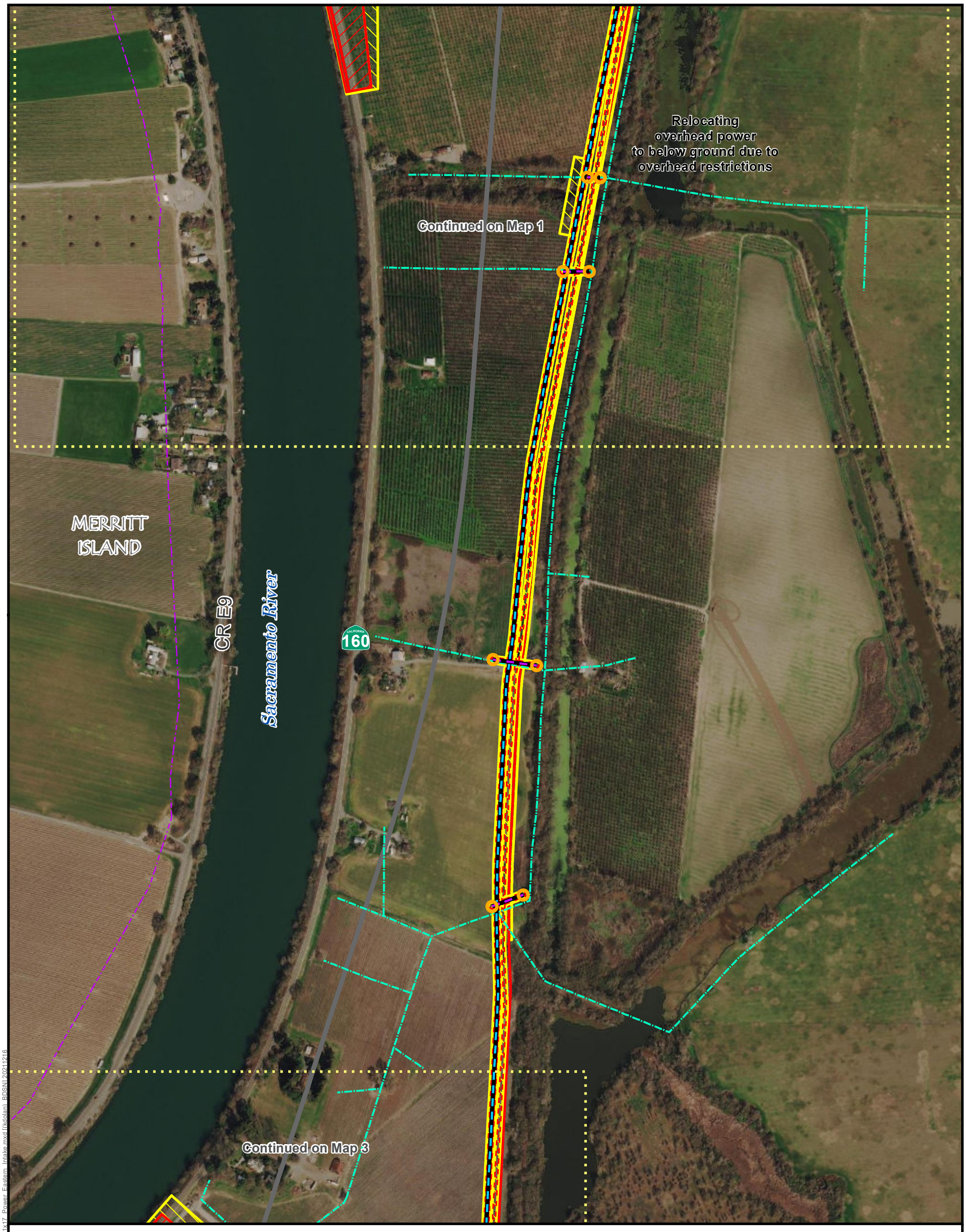
N

0 500 Feet

Map 1
Eastern Alternative Power Supply
Intake 2
12/23/2021

Data Source: DCA, DWR

TWGIS38\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern_Intake.mxd (kdolan) 20211216



Page Index
Connection to Existing Overhead

Proposed Underground Power
Outside Roadway
Relocated Non-Project Power

Existing Power

PG&E Low Voltage
21-22 kV

SMUD High Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 2
Eastern Alternative Power Supply
Intake Haul Road North
12/23/2021

Data Source: DCA, DWR

TWGIS48GIS_83_00GISRequest_11EDeliverable_10EENG159_21EENG159_21_11x17_Power_Eastern_Intake.mxd (ddolan) BDSNI 20211216

MERRITT ISLAND

CR E9

Continued on Map 2

On-site power route to be determined but will be located within site disturbance area

Sacramento River

160

MERRITT ISLAND

Continued on Map 4

Page Index
Connection to Existing Overhead
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 High Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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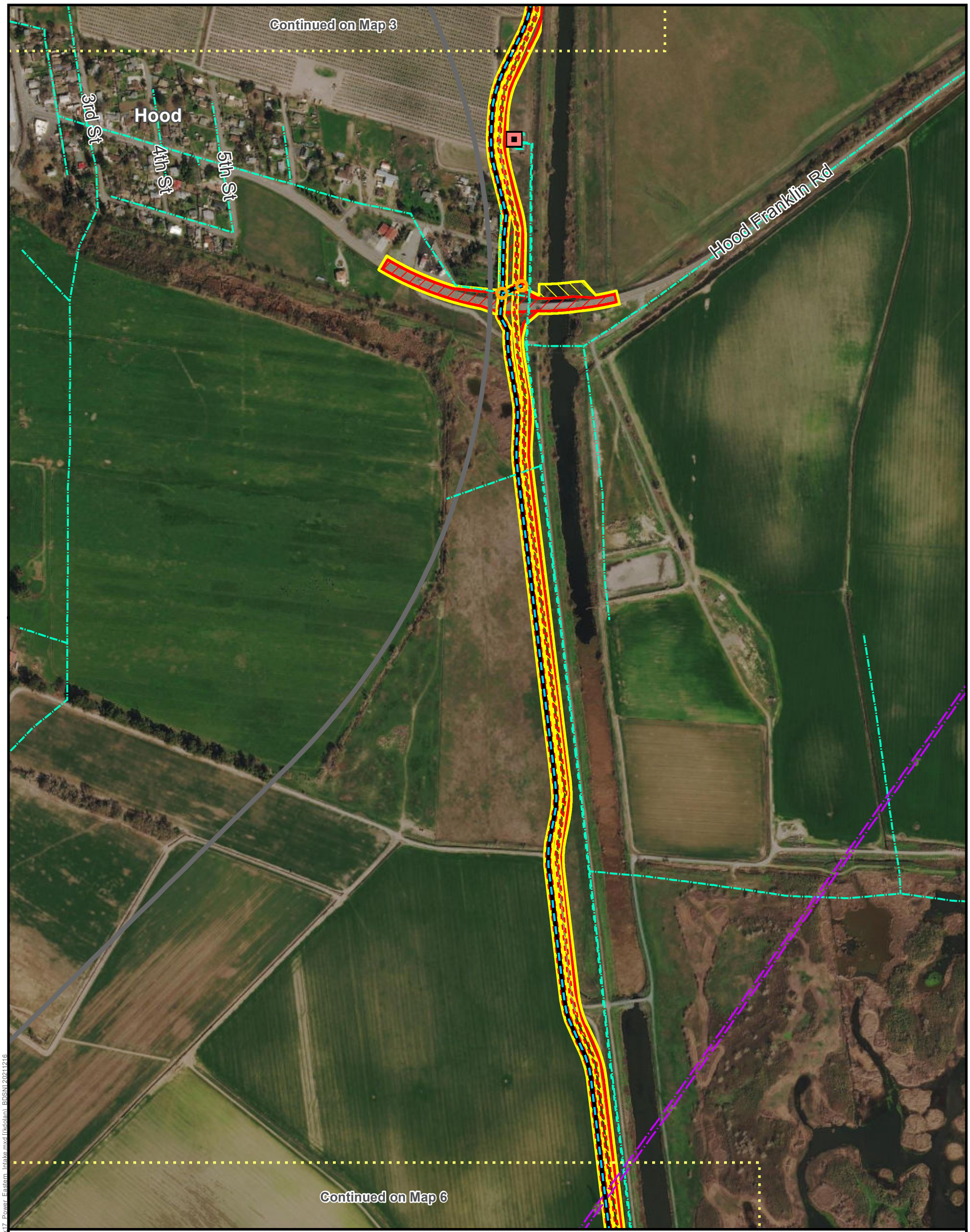
N

0 500 Feet

Map 3
Eastern Alternative Power Supply
Intake 3
12/23/2021

Data Source: DCA, DWR

T:\WG\138\GIS_33_00\GISRequest_1\EIR\Deliverable_10\EIR\G159_21\ENG159_21_11x17_Power_Eastern_Intake.mxd (lkodian) BDSN 20211216



Page Index
Existing Substation
Connection to Existing Overhead

Proposed Underground Power
Outside Roadway

Existing Power

PG&E High Voltage
115 kV

SMUD High Voltage
12 kV
60-70 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 4
Eastern Alternative Power Supply
Intake Haul Road North
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_16\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern_Intake.mxd (kkolan) BDSNJ 20211216

MERRITT ISLAND

CR E9

Sacramento River

TEMPORARY

160

On-site power route to be determined but will be located within site disturbance area

RANDALL ISLAND

Continued on Map 6

Page Index
Connection to Existing Overhead
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 High Voltage
12 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 5
Eastern Alternative Power Supply
Intake 5
12/23/2021

Data Source: DCA, DWR

Page Index

Proposed Underground Power
- Within Proposed Roadway
- Outside Roadway

Existing Power

PG&E High Voltage
- 115 kV

SMUD High Voltage
- 12 kV
- 60-70 kV

- Tunnel

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

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

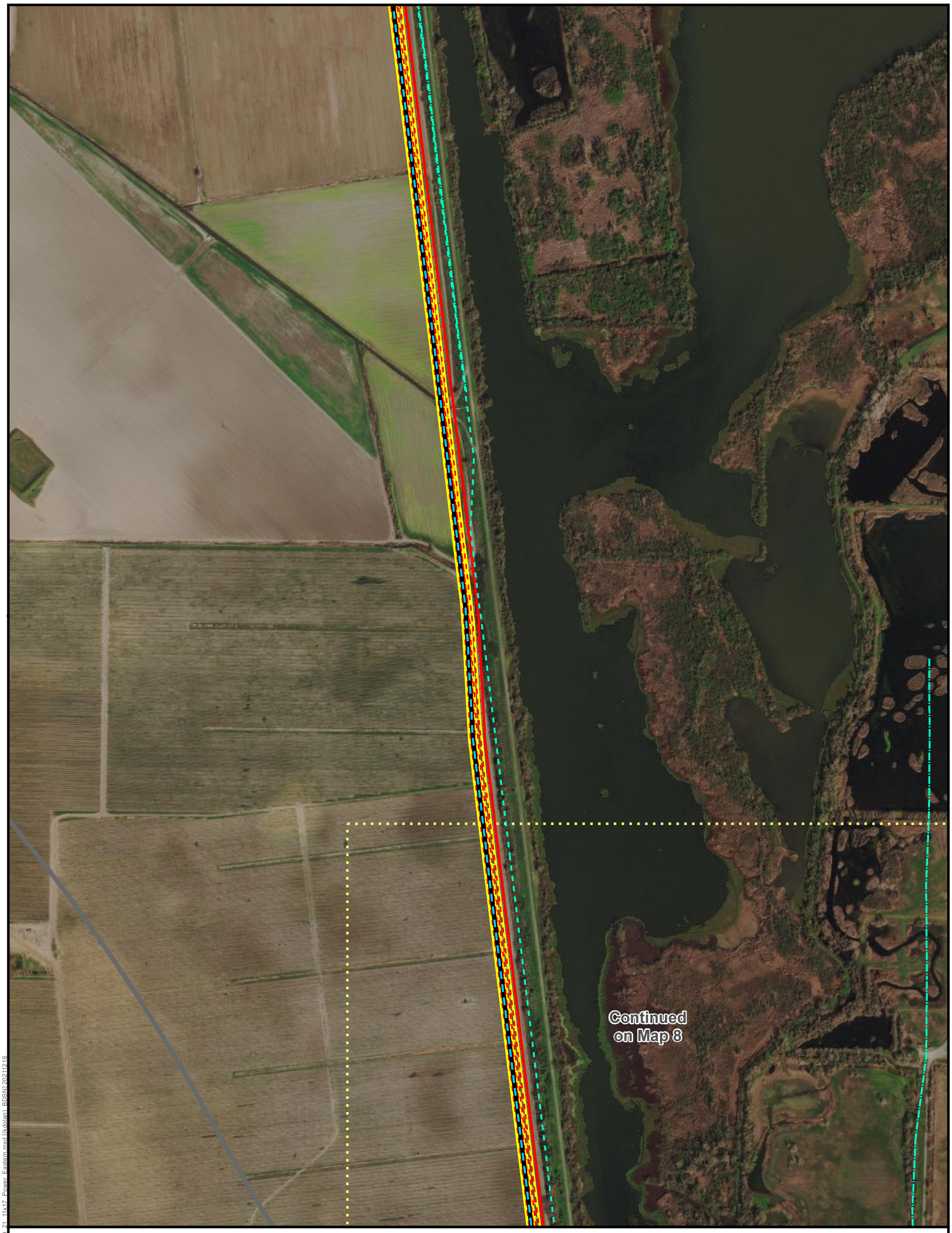
For Illustration Purposes Only

N

0 500 Feet

Map 6
Eastern Alternative Power Supply
Intake Haul Road South and Intake 5
12/23/2021

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 DESIGN & CONSTRUCTION AUTHORITY

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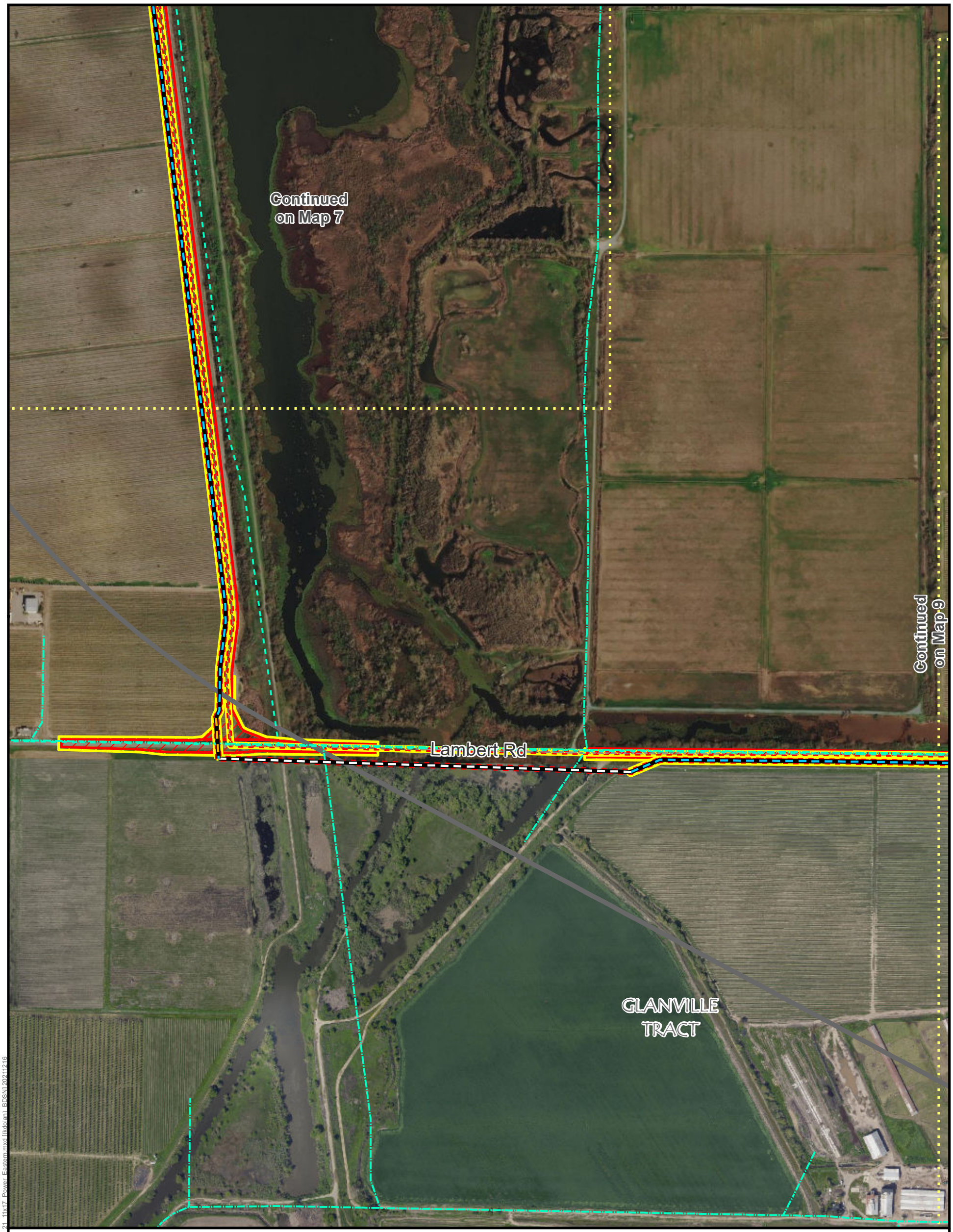
N

0 500 Feet

Map 7
Eastern Alternative Power Supply
Intake Haul Road South
12/23/2021

Data Source: DCA, DWR

TWGL38\GIS_33_00\GISRequest_11E\Deliverable_10E\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (lkdolan) BDSN1 20211216



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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 DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 500 Feet

Map 8
Eastern Alternative Power Supply
Intake Haul Road South and Lambert Road
12/23/2021

Data Source: DCA, DWR

Page Index
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 DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 9
Eastern Alternative Power Supply
Lambert Road
12/23/2021

Data Source: DCA, DWR

TWGIS38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kkolan) BDSN 20211216

Korn Rd

Point Pleasant Rd

Kestrel Lake Rd

5

Continued on Map 14

Continued on Map 9

Lambert Rd

Continued on Map 11

GLANVILLE TRACT

5

Page Index

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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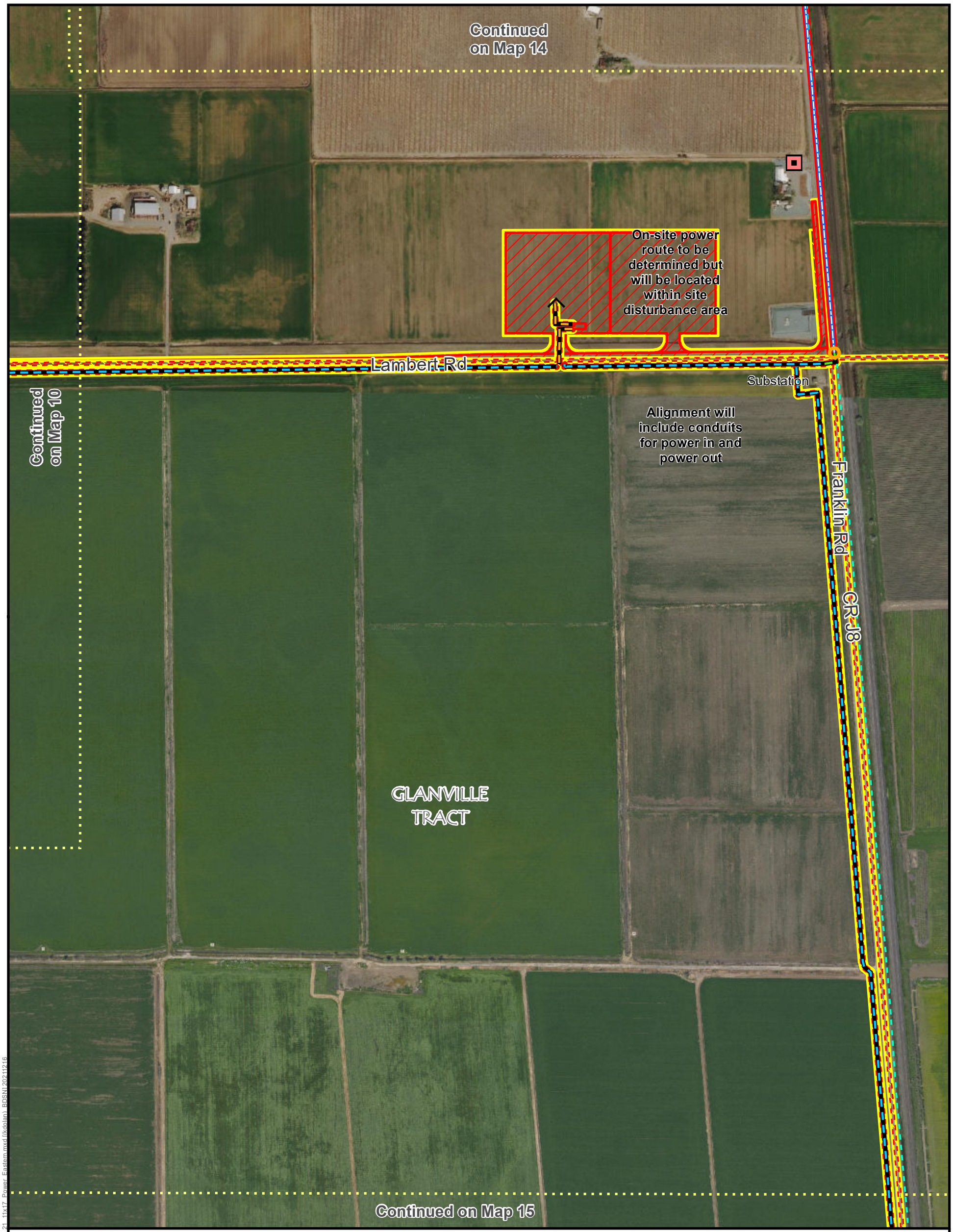
N

0 500 Feet

Map 10
Eastern Alternative Power Supply
Lambert Road
12/23/2021

Data Source: DCA, DWR

TWCI-38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG169_21\ENG169_21_11x17_Power_Eastern.mxd (kdolan) BDSNI 20211216



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Existing Substation
Connection to Existing Overhead

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 DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 11
Eastern Alternative Power Supply
Lambert Road/Franklin Concrete Batch Plant
12/23/2021

Data Source: DCA, DWR

TWCL-38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG169_21_11x17_Power_Eastern.mxd [(dolan) BDSNI 20211216

Page Index
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 DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 12
Eastern Alternative Power Supply
Franklin Road
12/23/2021

Data Source: DCA, DWR

TWGIS38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kdolan) BDSNJ 20211216

Page Index
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 DESIGN & CONSTRUCTION AUTHORITY

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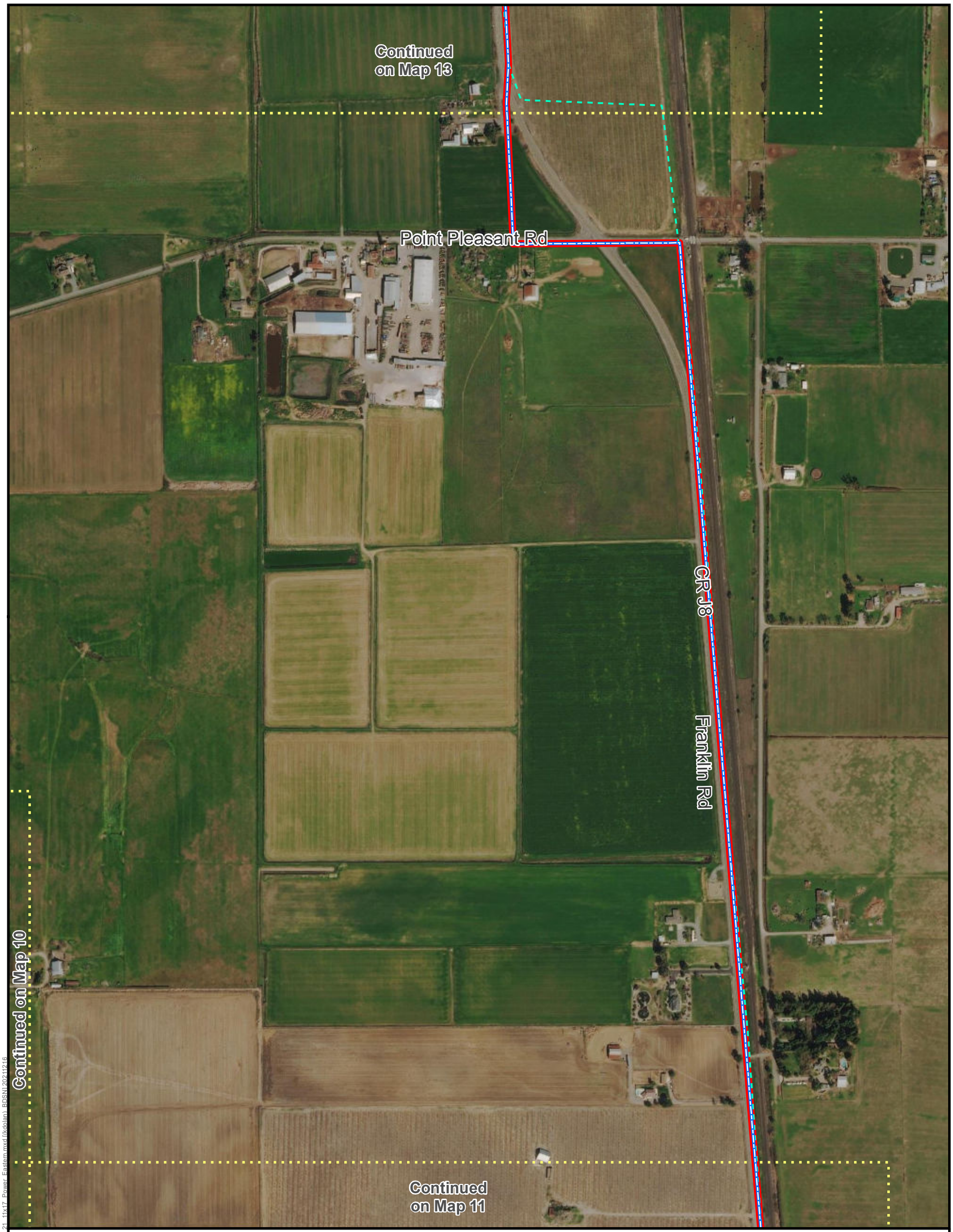
N

0 500 Feet

Map 13
Eastern Alternative Power Supply
Franklin Road
12/23/2021

Data Source: DCA, DWR

TWGIS-8\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kkoland) BDSN 20211216



Page Index
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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N

0 500 Feet

Map 14
Eastern Alternative Power Supply
Franklin Road
12/23/2021

Data Source: DCA, DWR

TWGL-48\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21_11x17_Power_Eastern.mxd (lkdolan) BDSN1 20211216

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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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N

0 500 Feet

Map 15
Eastern Alternative Power Supply
Twin Cities Complex
12/23/2021

Data Source: DCA, DWR

TWG138\GIS_33_00\GISRequest_11\EIDeliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kkolan) 8DSN1 20211216

Connection to Existing Overhead

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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N

0 500 Feet

Map 16
Eastern Alternative Power Supply
New Hope Tract
12/23/2021

Data Source: DCA, DWR

TWGIS3\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kkolan) BDSN 20211216

Blossom Rd

CANAL RANCH TRACT

On-site power route to be determined but will be located within site disturbance area

Peltier Rd

Connection to Existing Overhead

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

Map 17
Eastern Alternative Power Supply
Canal Ranch Tract
12/23/2021

Data Source: DCA, DWR

TWGL38\GIS_33_00\GISRequest_14\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kdolan) BDSN 20211216

Connection to Existing Overhead
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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N

0 500 Feet

Map 18
Eastern Alternative Power Supply
Terminous Tract
12/23/2021

Data Source: DCA, DWR

TWGIS38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (dcolan) BDSN 20211216

Connection to Existing Overhead
Proposed Underground Power
Within Proposed Roadway

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 19
Eastern Alternative Power Supply
King Island
12/23/2021

Data Source: DCA, DWR

Neugebauer Rd

San Joaquin River

Windmill Cove

On-site power route to be determined but will be located within site disturbance area

On-site power route to be determined but will be located within site disturbance area

LOWER ROBERTS ISLAND

Holt Rd

House Rd

Continued on Map 21

Inland Dr

Page Index

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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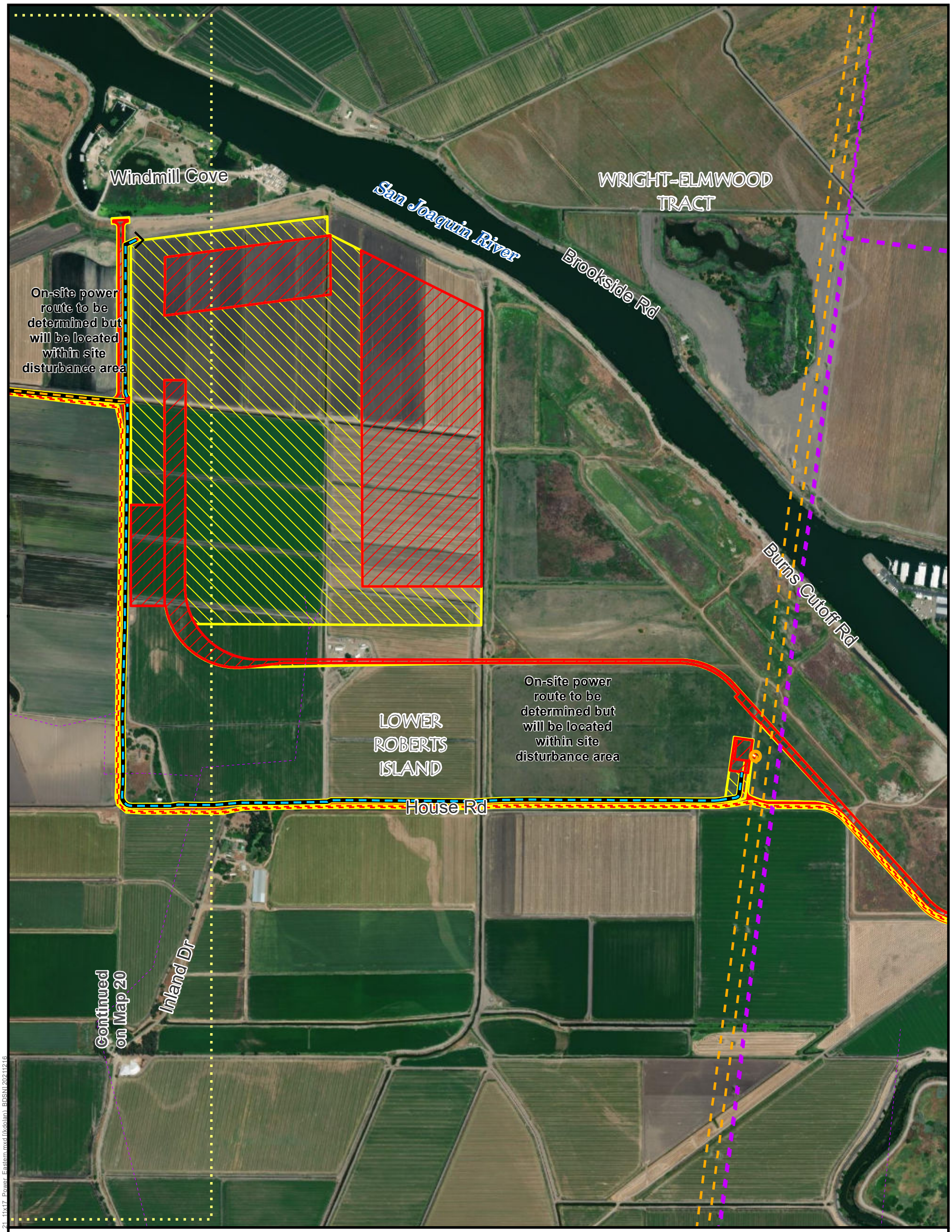
N

0 500 1,000 Feet

Map 20
Eastern Alternative Power Supply
Lower Roberts Island
12/23/2021

Data Source: DCA, DWR

TWGIS-38\GIS_83_00\GISRequest_11F\Deliverable_10F\ENG159_21_11x17_Power_Eastern.mxd (fdolan) BDSNI 20211216



Page Index
Connection to Existing Overhead

Proposed Underground Power
Within Proposed Roadway
Outside Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
230 kV
WAPA
230 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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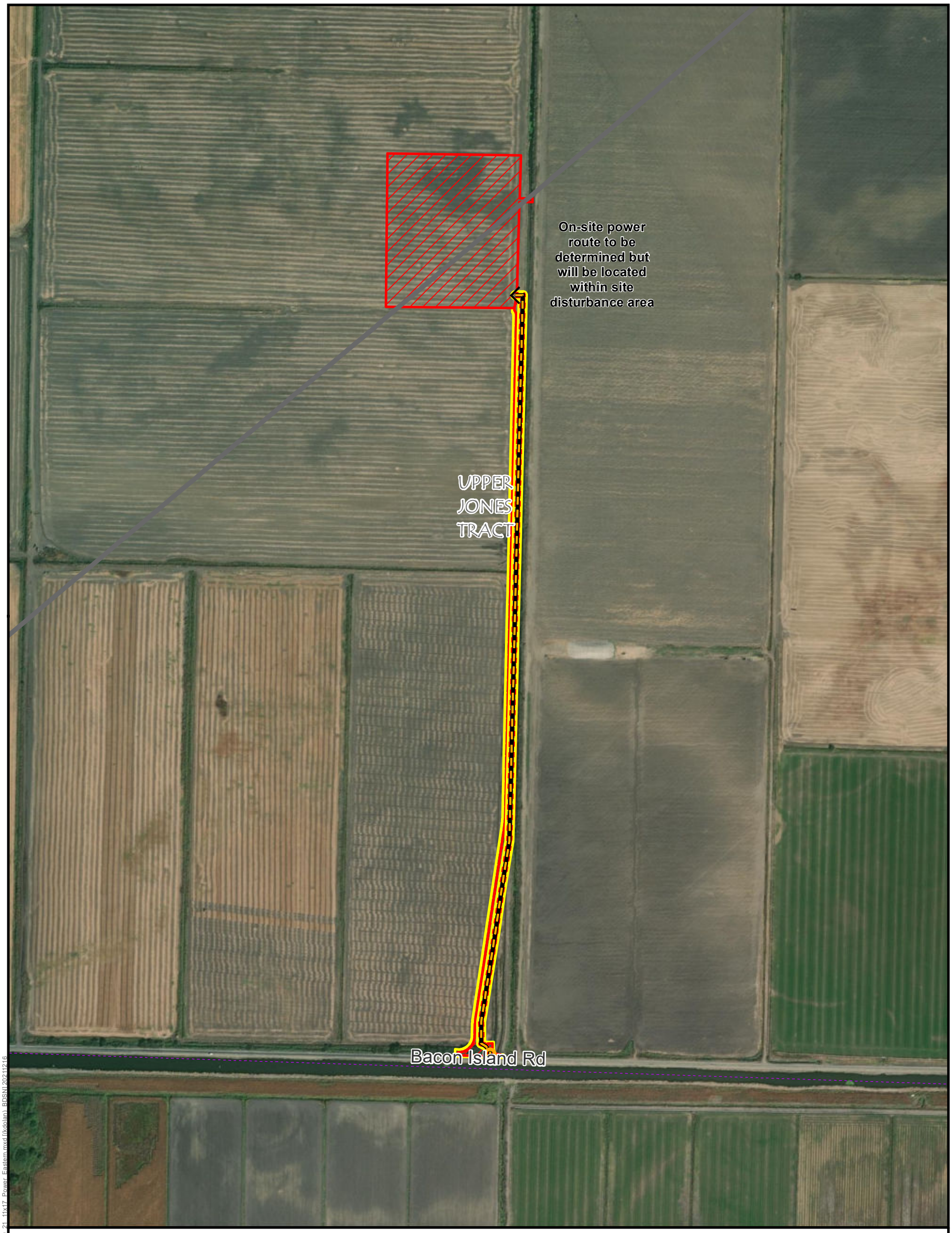
N

0 500 1,000 Feet

Map 21
Eastern Alternative Power Supply
Lower Roberts Island
12/23/2021

Data Source: DCA, DWR

TWG138\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (tkolan) 8DSN1 20211216



Connection to Existing Overhead

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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N

0 500 Feet

Map 22
Eastern Alternative Power Supply
Upper Jones Tract
12/23/2021

Data Source: DCA, DWR

TWGIS-3\GIS_83_00\GISRequest_11\EIDeliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (kkolan) BDSN 20211216

Continued on Map 26

On-site power route to be determined but will be located within site disturbance area

Diablo

BYRON TRACT

Continued on Map 24

Western Farms Ranch Rd

Page Index

Proposed Underground Power
Within Proposed Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power

PG&E High Voltage
500 kV

WAPA
60-69 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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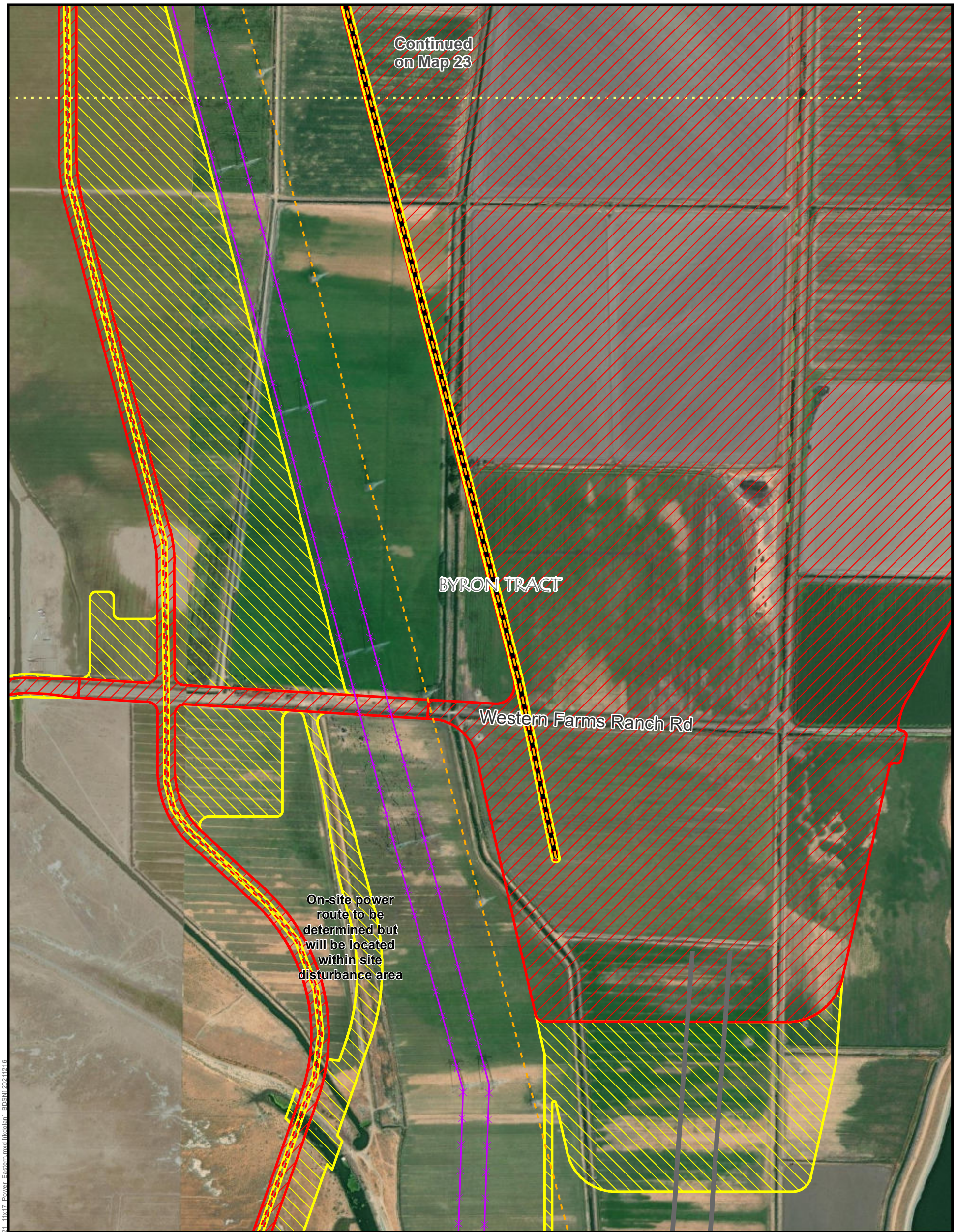
N

0 500 Feet

Map 23
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (fkdolan) BDSN 20211216



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Proposed Underground Power
Within Proposed Roadway

Existing Power
PG&E High Voltage
500 kV
WAPA
60-69 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

CONFIDENTIAL ATTORNEY-CLIENT
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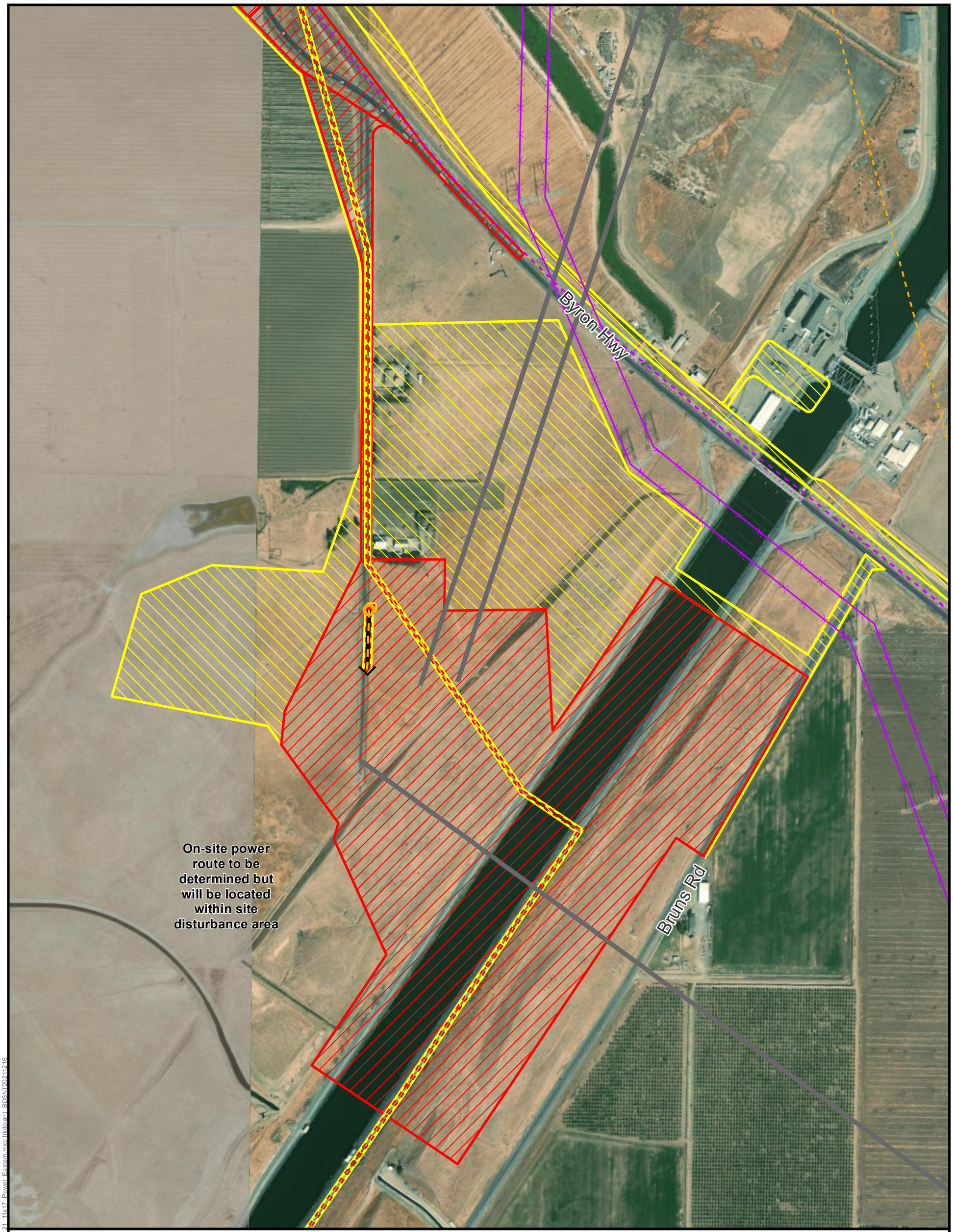
N

0 500 Feet

Map 24
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGI-38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG159_21_11x17_Power_Eastern.mxd [ddolan] BDSN 20211216



Connection to Existing Overhead

Proposed Underground Power
Within Proposed Roadway

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
500 kV
WAPA
60-69 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 25
Eastern Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

TWG\38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG159_21_11x17_Power_Eastern.mxd (fkdolan) BDSN 20211216

On-site power route to be determined but will be located within site disturbance area

BYRON TRACT

Continued on Map 23

Continued on Map 27

On-site power route to be determined but will be located within site disturbance area

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Proposed Underground Power
Within Proposed Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power
WAPA
60-69 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 26
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWCI-38\GIS_33_00\GISRequest_11\Deliverable_10\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd [ddolan] BDSN] 20241216

Page Index
Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 27
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGL-58\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21_11x17_Power_Eastern.mxd (lkdolan) BDSN) 20211216

Page Index
Proposed Underground Power
Outside Roadway
Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 28
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGL38\GIS_33_00\GISRequest_1\E\Deliverable_10\EIENG159_21\EIENG159_21_11x17_Power_Eastern.mxd (ikdolan) BDSN1 20211216

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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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N

0 500 Feet

Map 29
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGL38\GIS_33_00\GISRequest_11E\Deliverable_10E\ENG159_21\ENG159_21_11x17_Power_Eastern.mxd (lkdolan) BDSN1 20211216

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Proposed Underground Power
Outside Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV

WAPA
230 kV

Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 30
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWGL-SB\GIS_83_00\GISRequest_11\Deliverable_10\ENG159_21_11x17_Power_Eastern.mxd (tkdolan) BDSN| 20211216

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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
WAPA
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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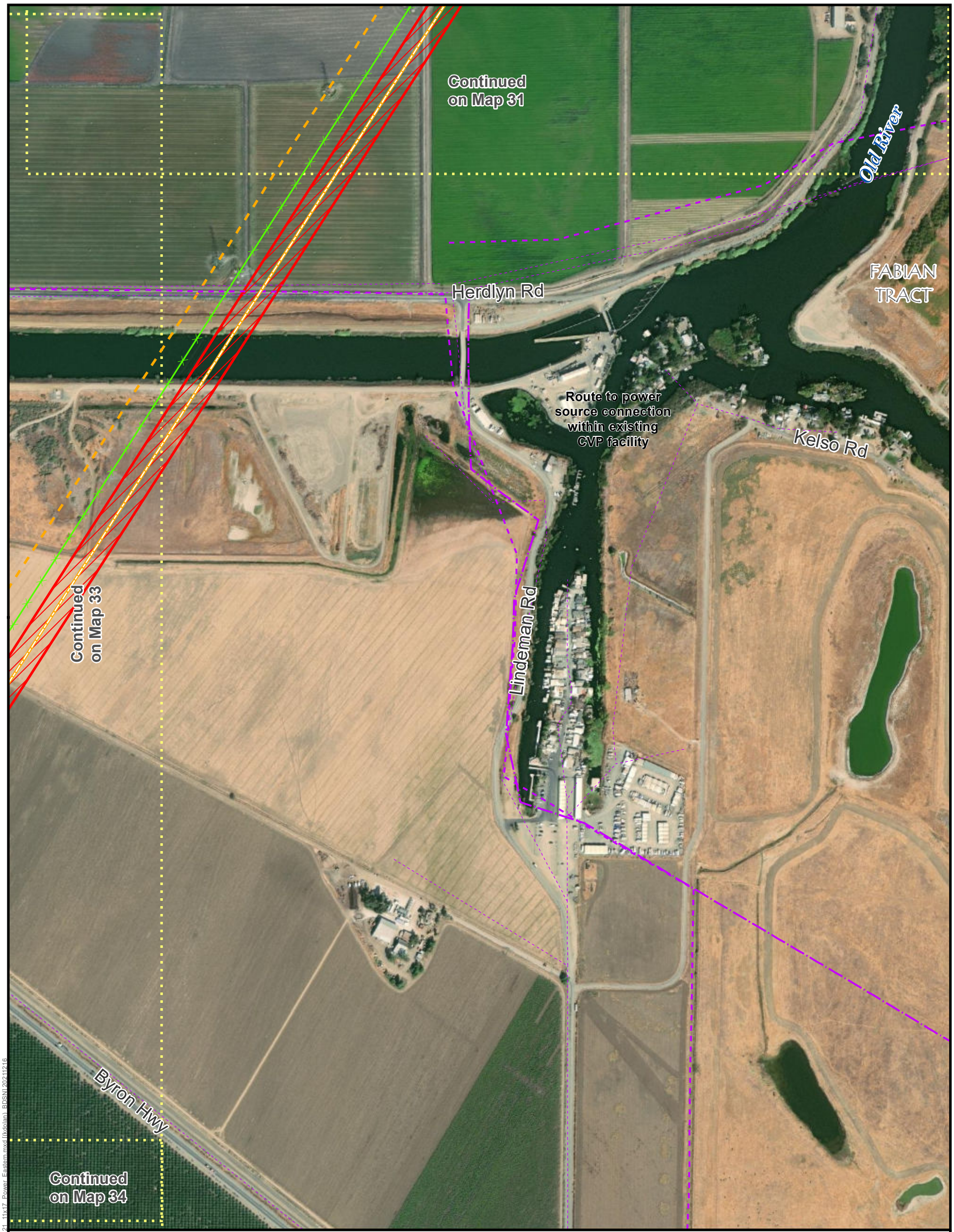
N

0 500 Feet

Map 31
Eastern Alternative Power Supply
Southern Complex
12/23/2021

Data Source: DCA, DWR

TWCI-48\GIS_33_00\GISRequest_11\Deliverable_10\ENG169_21_11x17_Power_Eastern.mxd jkodani BDSNI 20211216



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Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
115 kV
WAPA
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 32
Eastern Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

TWGL-SBGIS_33_000GISRequest_11\Deliverable_10\ENG\159_21_11x17_Power_Eastern.mxd (lkdolan) BDSN) 20211216

Herdlyn Rd

Continued on Map 31

Byron Hwy

Mountain House Rd

On-site power route to be determined but will be located within site disturbance area

Continued on Map 32

Continued on Map 34

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Proposed Underground Power
Outside Roadway

Proposed Overhead Power
New Line and Poles/Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
WAPA
230 kV
Other
TANC 500 kV

Tunnel

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 500 Feet

Map 33
Eastern Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

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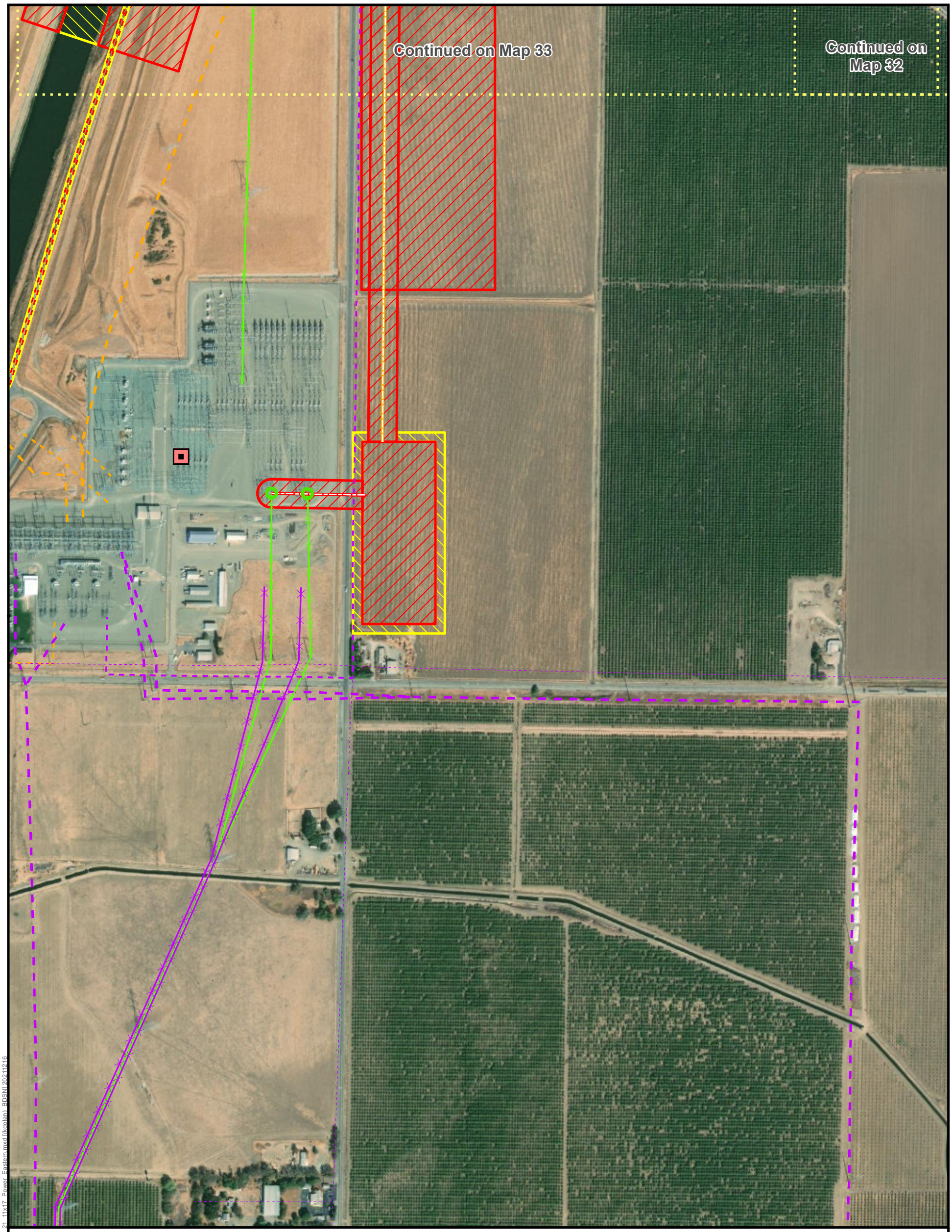

Page Index
Existing Substation
Connection to Existing Substation

Proposed Overhead Power
New Line and Poles/Towers
Overhead New

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
500 kV
230 kV
WAPA
60-69 kV
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N
0 500 Feet

Map 34
Eastern Alternative Power Supply
Southern Complex West of Byron Highway
12/23/2021

Data Source: DCA, DWR

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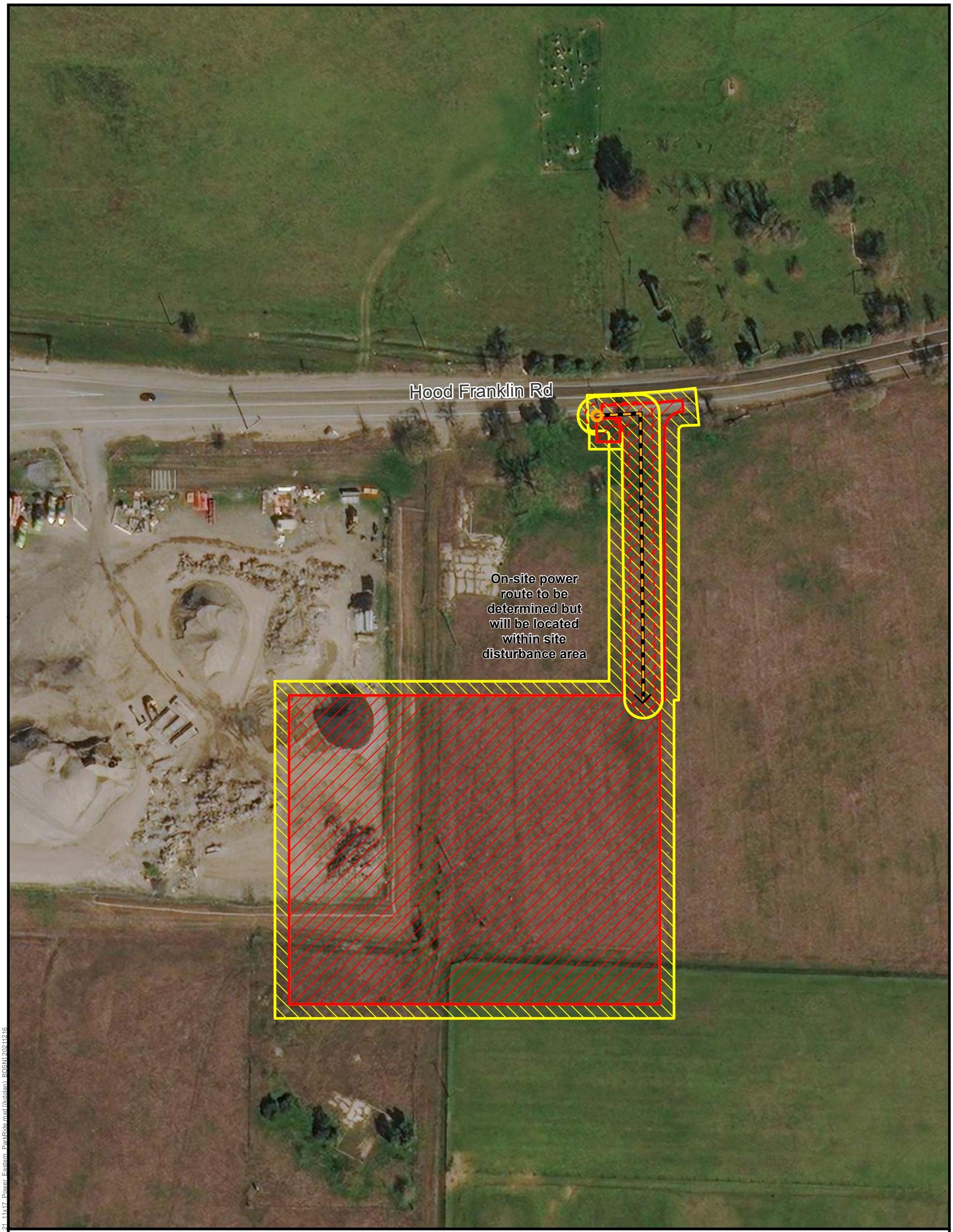

Connection to Existing Overhead
Proposed Underground Power
Within Proposed Roadway

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 100 Feet

Map 35
Eastern Alternative Power Supply
Hood Franklin Park & Ride
12/23/2021

Data Source: DCA, DWR

Connection to Existing Overhead

Proposed Underground Power

Within Existing Roadway

Within Proposed Roadway

Existing Power

PG&E Low Voltage

21-22 kV

PG&E High Voltage

60-70 kV

Permanent Subsurface Impact

Permanent Surface Impact

Temporary Surface Impact

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For Illustration Purposes Only

N

0 100 Feet

Map 36
Eastern Alternative Power Supply
Byron Park & Ride
12/23/2021

Data Source: DCA, DWR

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Connection to Existing Overhead

Proposed Underground Power

Within Existing Roadway

Within Proposed Roadway

Existing Power

PG&E Low Voltage

11 kV

PG&E High Voltage

60-70 kV

Permanent Subsurface Impact

Permanent Surface Impact

Temporary Surface Impact

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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 100 Feet

Map 37
Eastern Alternative Power Supply
Bethany Park & Ride
12/23/2021

Data Source: DCA, DWR

Connection to Existing Overhead

Proposed Overhead Power

New Line and Poles/Towers

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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DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N

0 100 Feet

Map 38
Eastern Alternative Power Supply
Charter Way Park & Ride
12/23/2021

Data Source: DCA, DWR

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